July 1955

RAILWAY TRACK and STRUCTURES

One of Five Specialized Railway Age Publications

This Issue:

TAFF REPORT:

Mobile, Off-Track Housing

Contents—page 35

FORMERLY Engineering and Maintenance

Gulf, Mobile & Ohio Railroad
First in Firsts
The Gulf, Mobile & Ohio traverses the deep South and is the first major railroad completely dieselized. In the early days, the Alton Road, now an affiliate, had the distinction of operating the first Pullman and the first dining-car.
GULF MOBILE & OHIO
GM&O
333

THE P & M CO.
CHICAGO • NEW YORK • DENVER • BOSTON • ST. LOUIS •
CLEVELAND • ST. PAUL WASHINGTON • SAN FRANCISCO
MEXICO D. F.

DW21 AND REAR DUMP ROCK WAGON

"Short turn around ...fast dump"

The quote above belongs to H. H. Listerud, rock foreman for R. A. Heintz Construction Co., Portland, Ore. J. S. Budd, project manager, worked with DW21 and Athey PR21 units on a track diversion in which 250,000 yards of rock were moved.

"Short turn around"—and here's proof! The big unit has a 90-degree turning angle. Combined with its short wheelbase (under 20 feet), the turning angle permits nonstop turns in 34 feet! An average automobile needs one-third more space to do the same thing.

"Fast dump"—and here's why. The 90-degree turning angle gives fast maneuverability in getting into dumping position. Then powerful hydraulic rams tilt the trailer body to 60 degrees, insuring swift, clean dump of any type of material. *Result: a heaping load can be ejected cleanly in 18 seconds!*

And a heaping load means 22.5 cubic yards. On the job pictured, two of the units are moving 1500 yards every eight hours over a haul of 1400 feet.

There's real economy in parts. The PR21 has the same size tires as the DW21, permitting money-saving tire rotation. And tires, wheels, brakes, drums and many other parts of the PR21 are interchangeable with the Cat* No. 21 Scraper.

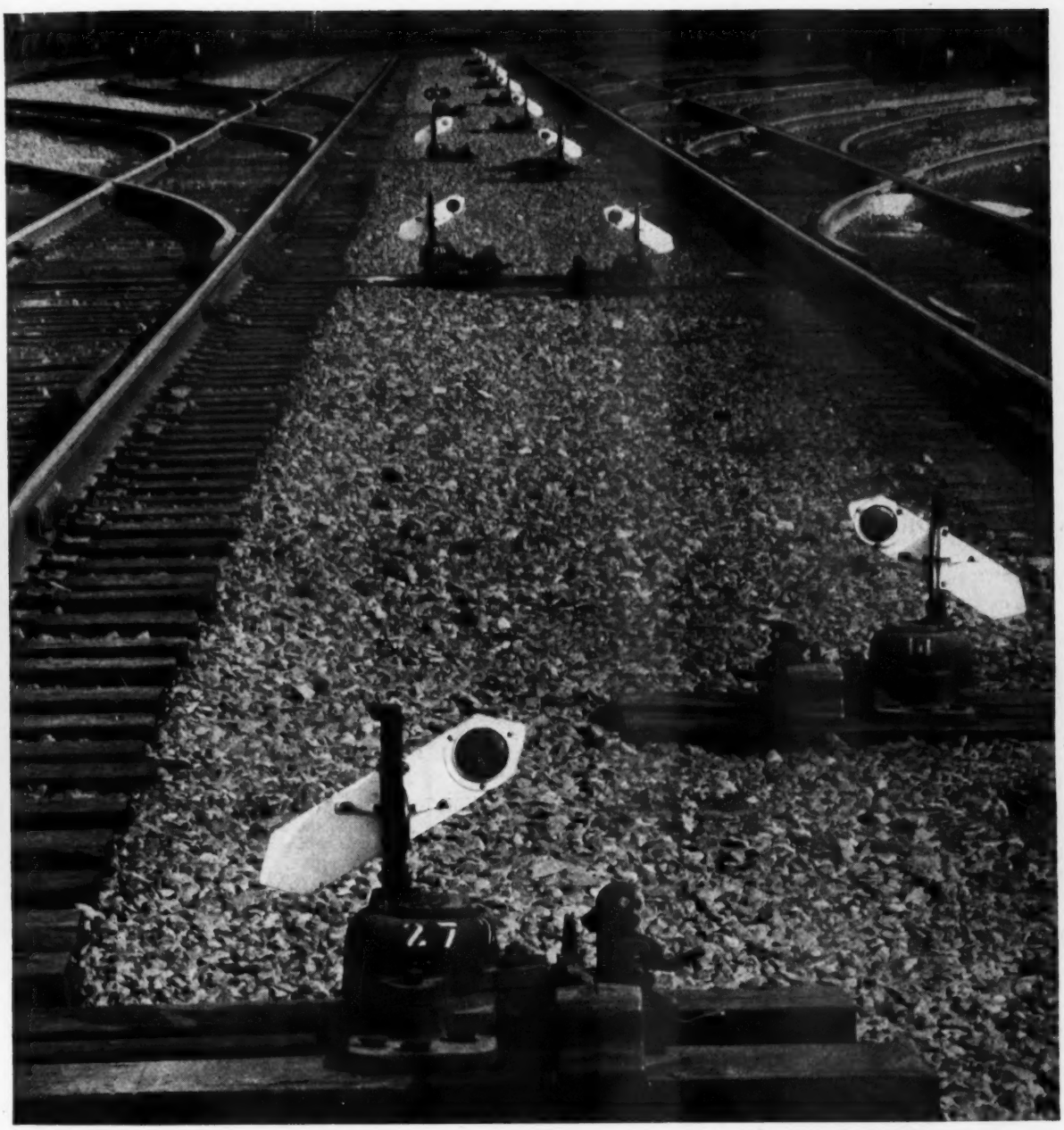
For off-track construction, nothing could be more efficient and economical than the brawny DW21-PR21 team and an additional No. 21 Scraper. Your Caterpillar Dealer can show you how this trio would give you equipment that could handle any big job with a minimum of investment. Just name the date—he'll demonstrate. On *your* job.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

USE CAT EQUIPMENT FOR MONEY-MAKING PERFORMANCE



How these New Centuries earn their keep

When you see a row of Model 51 New Century switch stands like this, you can be sure the railroad is getting its money's worth . . . and more.

First, there's the low first cost: amazingly low for such a foolproof and hard-working stand.

Then there's the adjustable feature built right into the stand itself, which takes the cost and bother out of switch-point adjustment. Simply insert or remove a shim or two to increase or decrease the throw.

The New Century will outlast several switches. Because the throw is adjusted within the stand, you can use the most economical switch fittings, such as rigid connecting rods, standard switch rods and clips.

If one of the New Century's parts should ever need replacing, you'll find that parts made today will fit stands made many years ago. When you decide to remove a New Century from main line service, you can oil her up and set her down in the toughest yard or siding job. Write for full details.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

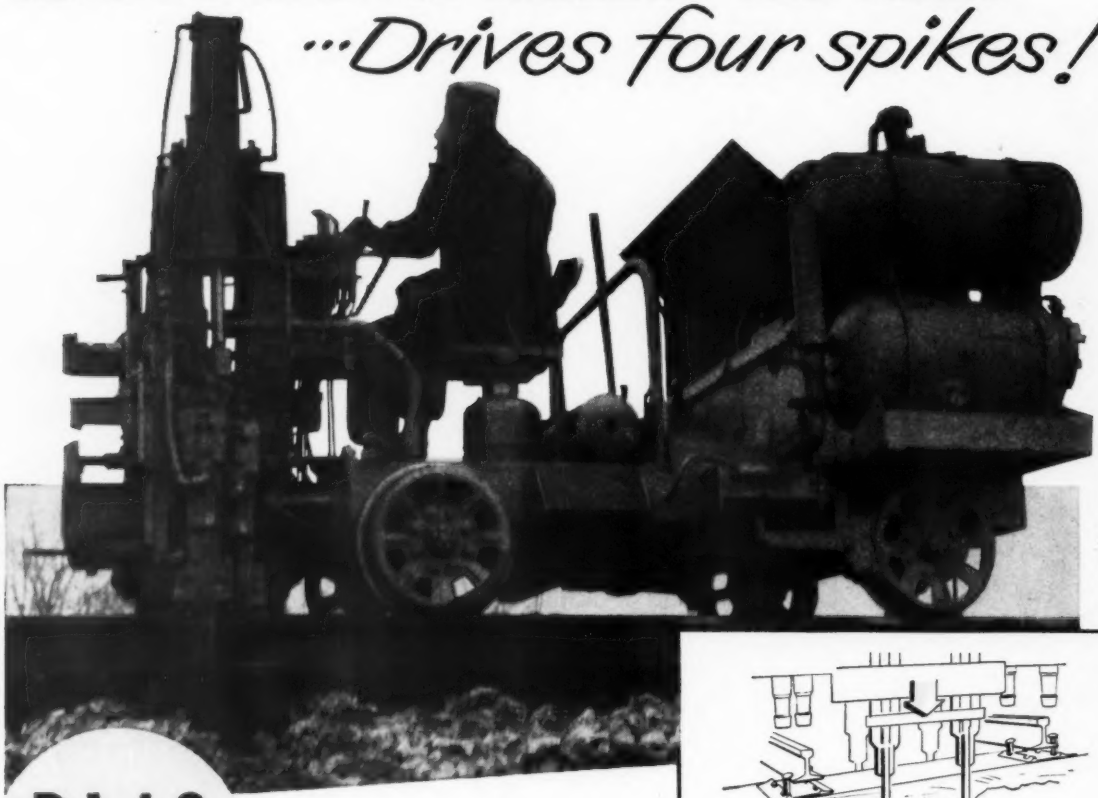
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Published monthly by Simmons-Boardman Publishing Corporation, Emmett Street, Bristol, Connecticut, with editorial and executive offices at 79 West Monroe Street, Chicago 3, Illinois; 30 Church Street, New York 7, New York. Subscription prices: to railroad employees only in the United States and Possessions, and Canada, one year $2.00; $3.00 for two years. Single copy 50 cents. Entered as second class matter at the Post Office at Bristol, Conn., November 26, 1954, under act of March 3, 1879. Volume 51, No. 7.

NIPS UP THE TIE AGAINST THE RAILS

...Drives four spikes!



RMC SPIKE Master

With an operating speed of better than two ties per minute, SpikeMaster drives four spikes—one on either side of both rails.

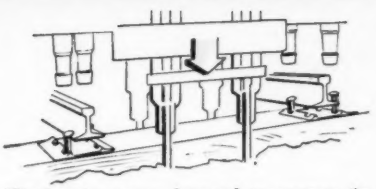
Machine is suitable for tie replacement or laying new rails. It is adjustable for driving either rail or anchor spikes on all tie plates. It can be used with pre-bored or non-bored ties. A hydraulic ram turntable enables operator to lift the machine, turn it and remove it from track.

Ask for Bulletin S-55

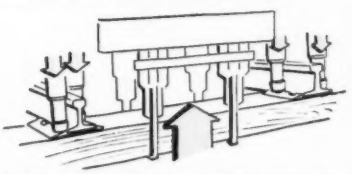
Railway Maintenance Corporation

Box 1888 Pittsburgh 30, Pa.

Designers and manufacturers of:
McWilliams Mole, Super Mole . . . McWilliams Tie Tamper, Crib Cleaner, Ballast Distributor . . . TieMaster . . . LineMaster . . . SpikeMaster



Nipping tongs are lowered to engage tie and raise it square with the rails.



With tongs holding tie, driving guns drive spikes on either side of both rails.

Machine with one set of driving guns operating, the other in travel position. Both sets of guns operate simultaneously if desired.

DON'T OVERLOOK THE PULLSHOVEL!

THE Pullshovel is a versatile machine. It will dig narrow, straight walled trenches impossible with a dragline. Depths up to 32 ft. have been handled and it has proved itself in rock digging and hard pan.

The Pullshovel is always "up on top." It digs from firm ground and without straddling the ditch. Larger Northwests bring you positive traction on both crawlers while turning as well as when going straight ahead and Northwest traction with its self-cleaning action has been proved on all models in miles of travel. They will work along the right-of-way or on jobs off the line and when required they can be put on the "off line" jobs by trailer.

Northwests load and unload themselves on one standard flatcar under their own power. They will travel from car to car over flats or through drop-end gondolas and their ease of handling makes it possible to quickly clear the line.

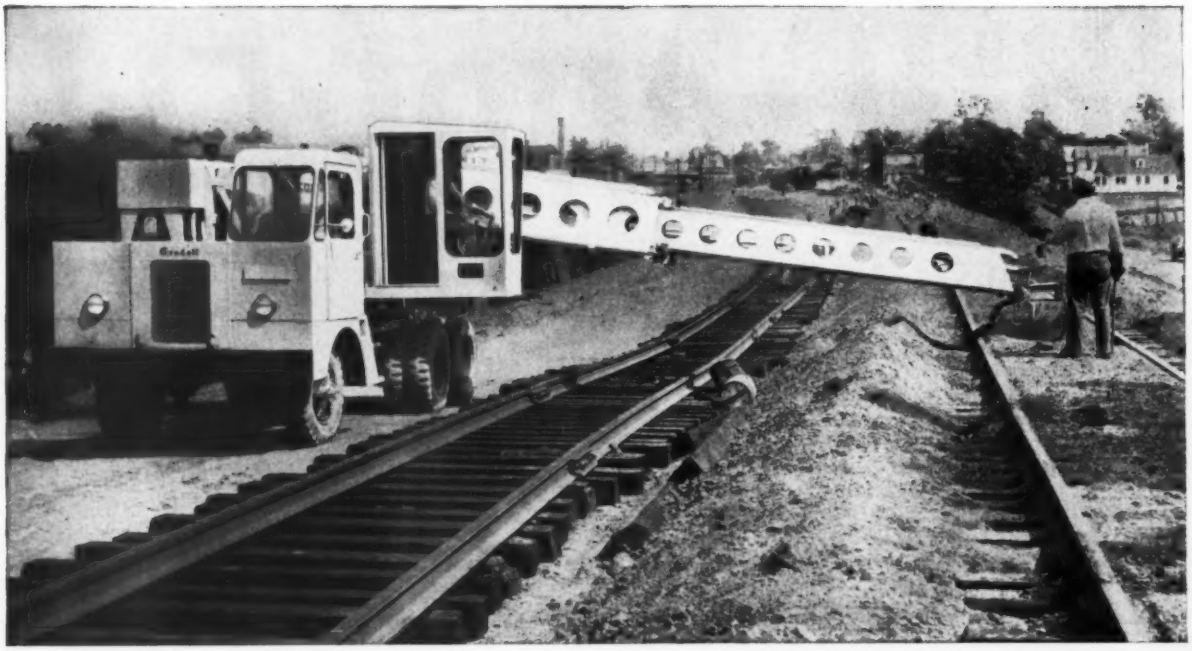
All Northwests can be equipped as a Shovel, Crane, Dragline or Pullshovel and they are readily convertible from one to the other by simply changing booms. The Northwest has many advantages that make it a better Railway Machine. Ask for details.

NORTHWEST ENGINEERING COMPANY

1513 Field Building • 135 South La Salle Street • Chicago 3, Illinois

NORTHWEST

THE ALL PURPOSE RAILROAD MACHINE
CRAWLER OR RUBBER MOUNTED SHOVELS
CRANES • DRAGLINES • PULLSHOVELS



"We've used the GRADALL for more different jobs than any other machine!"

MR. C. H. VOGT, *Chief Engineer,* Maintenance-of-Way Department
CENTRAL RAILROAD OF NEW JERSEY

● "It's the best machine for railroads, along with the bulldozer, that I've ever seen," Mr. Vogt went on to say. "We've lined track, spread asphalt, used it as a crane, plus many other more usual jobs."

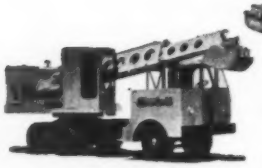
Lining sections of track is one example of the many "bonus" jobs Jersey Central handles with the Gradall. Its *arm-action* boom reaches out, hooks the bucket around ties and rail, and pulls the section of track into place. Two men check track alignment at either end. One operator handles the Gradall, equipped with remote control*. The job previously required 15 men!

Jersey Central has also come up with another new job for the Gradall—loading piles of ties. Extra jobs like these —jobs you can do *in addition* to regular work — really make the Gradall pay off! With a single investment you'll have a machine that does the work of many—a *busy* machine that gives you more on-the-job hours the year 'round.

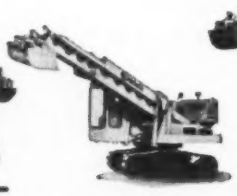
So before you invest in *any* maintenance or construction machine, contact us for a field demonstration of the multi-purpose Gradall. *The Warner & Swasey Company, Gradall Division, Cleveland 3, Ohio.* *Optional equipment

NEW RAILROAD GRADALL — *Equipped with track-climbing tires and power steering for on-track as well as off-track maintenance. Works over* every mile *of track.*

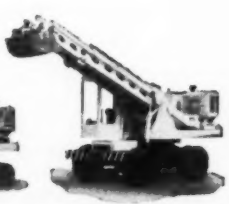
NOW ALSO AVAILABLE



GRADALL— STANDARD CARRIER



CRAWLER-MOUNTED GRADALL



SELF-PROPELLED GRADALL

Gradall
DIVISION OF WARNER & SWASEY *Cleveland*
PRECISION MACHINERY SINCE 1880

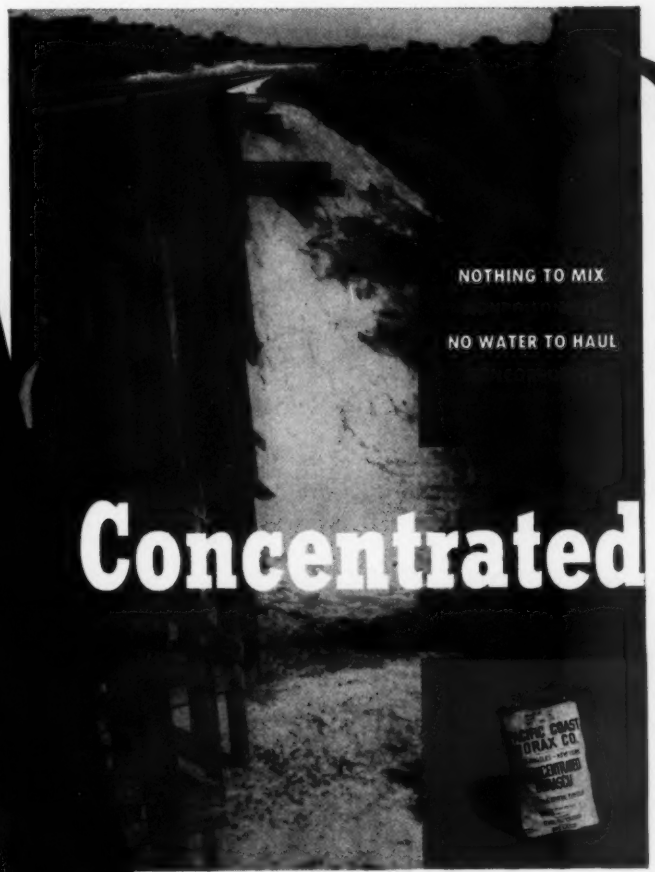
Distributors in over 75 principal cities in the United States and Canada

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS . . . WITH A WARNER & SWASEY

Where hand scalping costs are too high!

Effectively Stop Weeds

this low-cost thrifty way!



SAVE Up to 85% of your grassing costs!
Put Concentrated Borascu Weed Killer about your timber structures, yards, tie piles, sidings and buildings to get greatest protection from brush fires at lowest cost! Weeds-grasses are stopped, leaving nothing but bare ground wherever Concentrated Borascu is applied properly. Don't sacrifice your costly man-power on grassing...this modern method is thriftier!

Concentrated Borascu®

When Borascu's in...weeds stay out!
Weeds and grasses just *can't* grow on soil where Borascu has been applied! And such soil remains sterile for long periods because this inorganic borate doesn't break down. Applications are simple; there is nothing to mix . . . no water to haul and the most unskilled laborer can do the job. You'll find it pays to use Concentrated Borascu.

Saves you Dollars!

Kills Weeds for Pennies!

PACIFIC COAST BORAX CO.

DIVISION OF BORAX CONSOLIDATED, LIMITED

630 SHATTO PLACE, LOS ANGELES 5, CALIFORNIA

NEW FROM CATERPILLAR!

TWO MODERN, COMPACT, HEAVY-DUTY RAILROAD DIESELS

THE NEW
D342

THE NEW
D339

190 HP	**INTERMITTENT OUTPUT** Maximum recommended for loads of short duration (1 hour or less) with equal periods at idle or low load.	126 HP
171 HP	**RATED OUTPUT** Maximum recommended for loads of moderate duration (12 hours or less) with equal periods at idle or low load.	112 HP
152 HP	**CONTINUOUS OUTPUT** Maximum recommended for loads of unlimited duration.	100 HP

All at 1200 r.p.m. with full equipment

This is the same trouble-free engine which powers Caterpillar's mighty D8 Tractor. Coming soon: the new D342 Electric Set!

Balancers—standard equipment on the new D339—give this powerful 4-cylinder engine all the smoothness of 6-cylinder performance!

Here are the latest advances in diesel engine design. Compared to other engines in their class, these two new CAT* Engines offer you better operation, less maintenance, higher horsepower and more compact design. Take a quick look!

CHOICE OF STARTING SYSTEMS!

AIR

For fast starts where a supply of compressed air is readily available, a sturdy vane-type air motor is offered. Also available: air compressors and storage equipment.

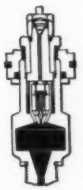
ELECTRIC

Where speed of starting is especially important. Also available: automatic start-stop controls which require no operating personnel.

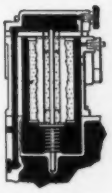
GASOLINE

For all-weather starting. This system preconditions the diesel, and supplies full lubrication before diesel is started. Also available: electric starters for the gasoline starting engine.

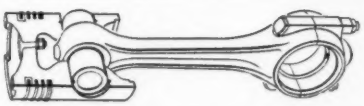
ECONOMICAL FUEL SYSTEM!



Same famous tinker-free fuel system so successful on other Caterpillar Engines. Capsule-type injection valves with single, large, foul-proof orifices, plus special precombustion chambers, permit these engines to operate—even idle—on low-cost non-premium fuels. And full-flow filtering is assured with new paper-type element that is not affected by water.



FIELD-TESTED PISTON ASSEMBLIES!



Pistons, rings and rods in these two new engines are like those used in Caterpillar's famous V-type Engines. Heat plugs, chrome-faced rings, cast-iron top ring bands give thousands of hours of operation before inspection is necessary.

MANY OTHER IMPORTANT FEATURES!

BRIEF SPECIFICATIONS

D342		D339
Four-cycle, valve-in-head		
6	Number of cylinders	4
5¾ in. x 8 in.	Bore and stroke	5¾ in. x 8 in.
1246 cu. in.	Piston displacement	831 cu. in.
1200	Rated speed, r.p.m.	1200
425	Low idle speed, standard, r.p.m.	425

Your Caterpillar Dealer has full details on both of these compact, new engines. Call him today for modern heavy-duty diesels. And remember him, too, for prompt, complete installation and service.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

We'd be glad to send you more information on the new D342 and D339. Just mail the coupon below.

CATERPILLAR TRACTOR CO., Dept. 8594, Peoria, Illinois, U. S. A.

Send me complete details on the new D342 and D339.

Name_____

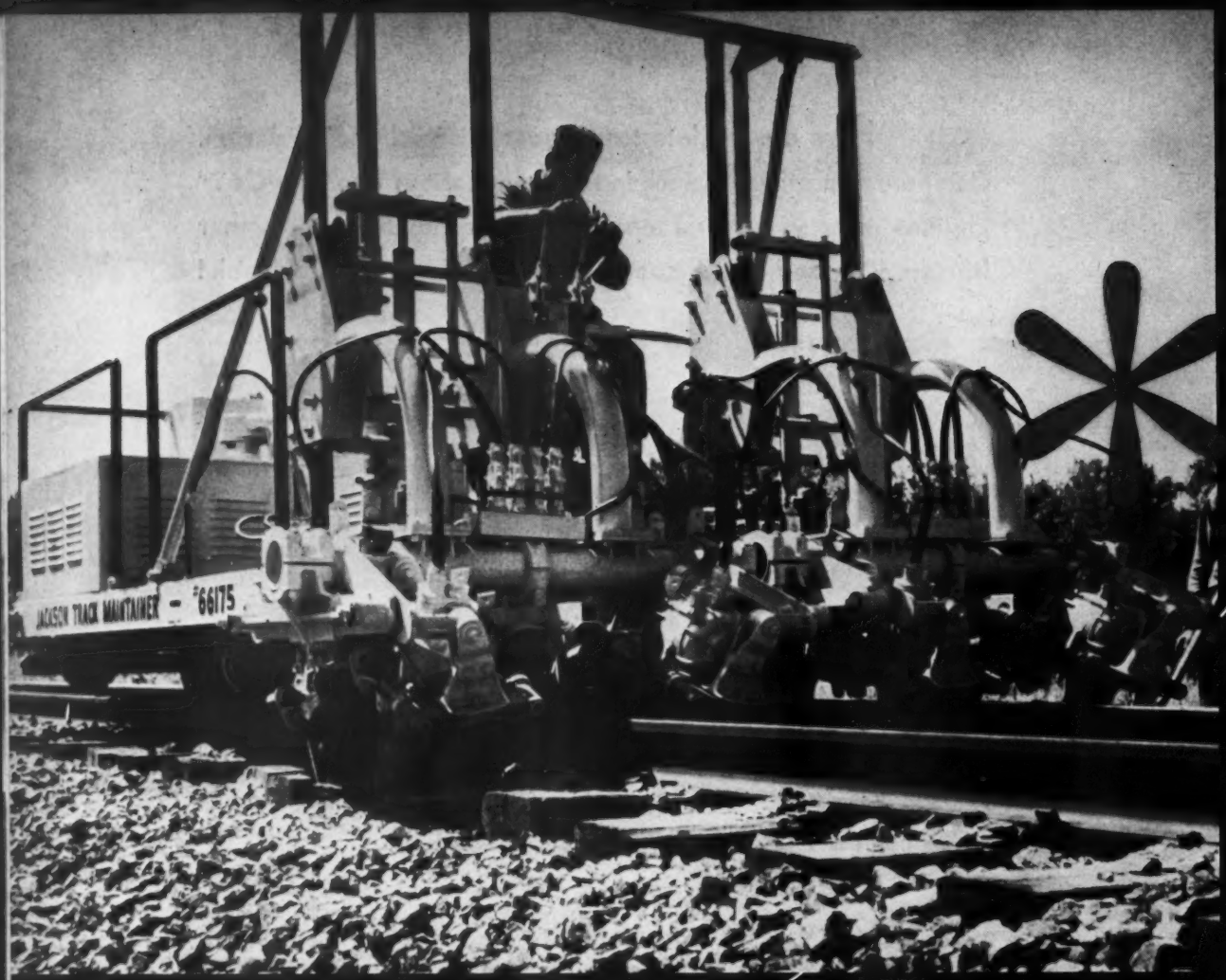
Address_____

City_____ State_____

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

THE D342 AND D339—LATEST EXAMPLES OF CATERPILLAR LEADERSHIP IN ACTION



JACKSON TRACK MAINTAINER

The evidence of this machine's great superiority as a means of both putting up and maintaining track of finest quality — in any ballast, under ALL conditions — is so preponderant that we confidently predict neither you nor any track chief who possesses the complete facts will specify any other. By all means write, wire or phone for complete information before making any commitments.

Acquirement plans to suit your needs.

LUDINGTON, MICHIGAN

The test that PROVED-IN ITV-Microwave for Railroad Operations!

Experimental Link by

Federal-Farnsworth

for Rock Island in Chicago is the first demonstration by a railroad of the unlimited opportunities in combining Industrial TV and Microwave

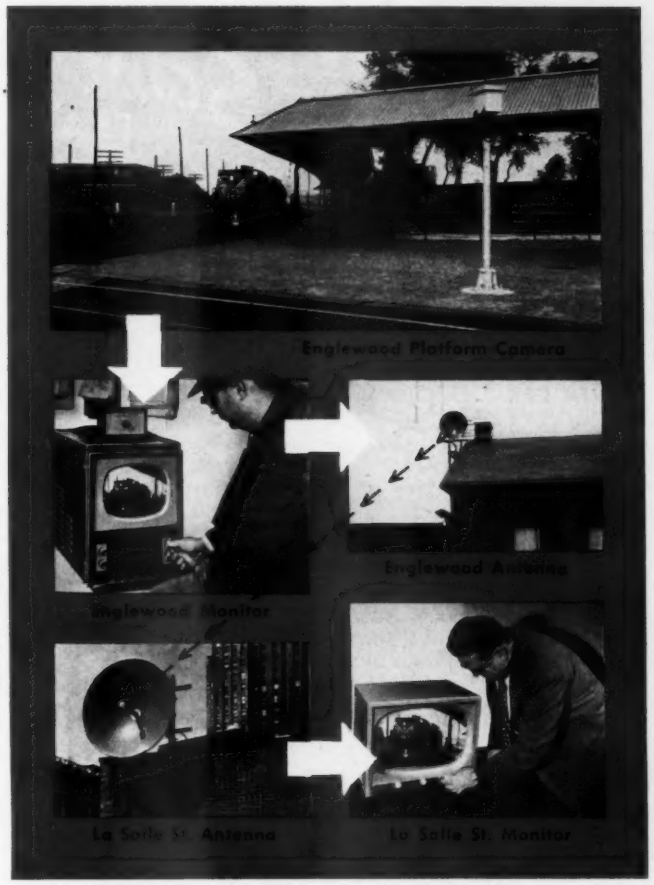
The Chicago, Rock Island and Pacific Railroad Company and Federal-Farnsworth have completed a history-making test that opens the way to broader and more efficient use of closed circuit TV by the railroad industry.

In the Chicago demonstration, a weather-proof, rotating ITV camera was mounted on the platform of the busy Englewood Station at the main line crossing. Visual information on train arrivals and departures and the loading and unloading of passengers, baggage, and mail was fed to a TV monitor, thence to a microwave antenna for transmission to a slave monitor in the La Salle Street Union Station . . . six miles away . . . enabling Rock Island executives to "see" train and passenger movements at the instant they were happening!

The Chicago test not only pioneered ITV-Microwave transmission by a railroad, but proved-in the value of this modern communication tool to traffic control in high-density areas.

ITV—*"The Eyes of Industry"*—has already proved its worth in railroad operations, such as reading of car numbers, checking of equipment, car inspection, yard surveillance, and security work. Now, Farnsworth ITV and Federal Microwave links . . . of any length or channel capacity . . . bring to railroad communications and signaling greater flexibility and versatility . . . the enormous advantage of *instantaneous, visual contact with conditions which may be miles away.*

For complete data on the test that proved-in ITV-Microwave for railroad operations, write to Federal's Railroad Industry Sales Organization, Dept. P-986.



Everything you need for any ITV-Microwave application:

- The standard Farnsworth ITV System consists of lightweight camera and 10-inch-screen monitor, featuring 600-line resolution, remote optical focusing and all camera controls at the monitor.
- Federal Microwave, for interworking with ITV, provides today's finest equipment for links or networks of any channel capacity. More than 6,000 route-miles of Federal Microwave already installed in the U.S.

Whatever the application or distance, Federal-Farnsworth Systems, backed by the vast technical and manufacturing resources of the world-wide IT&T, meet all needs of railroad applications for ITV-Microwave facilities.

Federal Telephone and Radio Company
A Division of INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION
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Export Distributors: International Standard Electric Corp., 67 Broad St., New York

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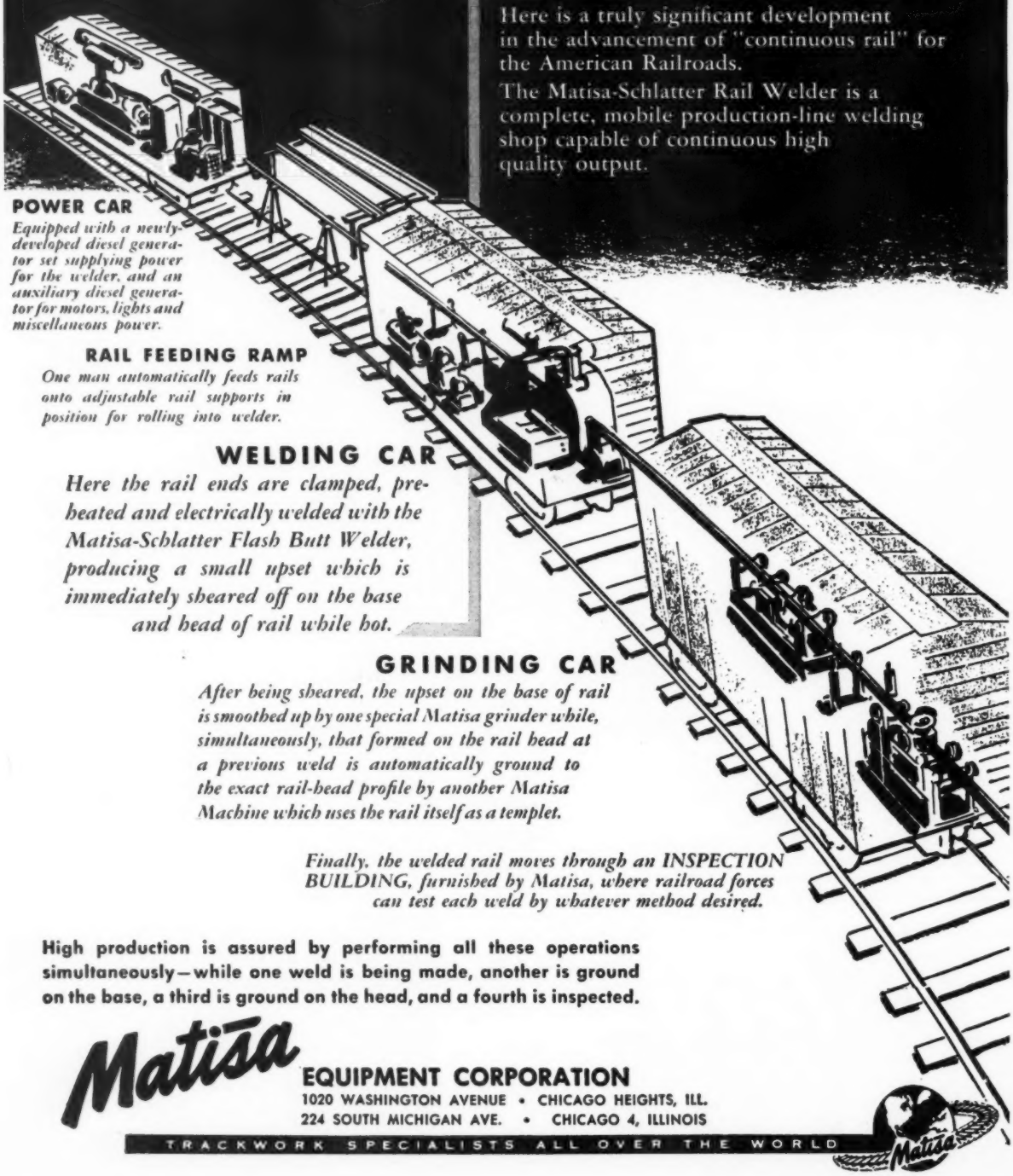
THE NEW Matisa–Schlatter

FLASH BUTT RAIL WELDER

Here is a truly significant development in the advancement of "continuous rail" for the American Railroads.

The Matisa-Schlatter Rail Welder is a complete, mobile production-line welding shop capable of continuous high quality output.



POWER CAR

Equipped with a newly-developed diesel generator set supplying power for the welder, and an auxiliary diesel generator for motors, lights and miscellaneous power.

RAIL FEEDING RAMP

One man automatically feeds rails onto adjustable rail supports in position for rolling into welder.

WELDING CAR

Here the rail ends are clamped, preheated and electrically welded with the Matisa-Schlatter Flash Butt Welder, producing a small upset which is immediately sheared off on the base and head of rail while hot.

GRINDING CAR

After being sheared, the upset on the base of rail is smoothed up by one special Matisa grinder while, simultaneously, that formed on the rail head at a previous weld is automatically ground to the exact rail-head profile by another Matisa Machine which uses the rail itself as a templet.

Finally, the welded rail moves through an INSPECTION BUILDING, furnished by Matisa, where railroad forces can test each weld by whatever method desired.

High production is assured by performing all these operations simultaneously—while one weld is being made, another is ground on the base, a third is ground on the head, and a fourth is inspected.

Matisa **EQUIPMENT CORPORATION**

1020 WASHINGTON AVENUE • CHICAGO HEIGHTS, ILL.
224 SOUTH MICHIGAN AVE. • CHICAGO 4, ILLINOIS

TRACKWORK SPECIALISTS ALL OVER THE WORLD

News Notes

. . . a resumé of current events throughout the railroad world

RAILWAY
TRACK and STRUCTURES

JULY, 1955

Class I railroads had estimated net income of $243 million in the first four months of 1955, an increase of $111 million compared with the same period last year. Net income for April was $67 million compared with $40 million for April 1954.

•

The Southern has revealed plans for building a new $15-million "ultra-modern retarder yard" at Atlanta, Ga. No definite starting date has been set.

•

The Frisco will soon launch the largest yard construction program in its history. A total of about $16 million will be invested in the construction of two yards, one at Capleville, near Memphis, Tenn., and the other at Tulsa, Okla. The Capleville project will be entirely new and will cost $10 million. At Tulsa an existing yard will be expanded and modernized. Both new yards will be of the hump-retarder type.

•

Work is to start immediately on a 16-month project to convert, from four main tracks to two, that part of the New York Central's main line between Cleveland and Buffalo, 185 miles. The $6-million project will produce considerable economies in track and signal maintenance, taxes and operating costs, but with no decrease in capacity, according to NYC President Alfred E. Perlman.

•

Joint operation of certain facilities is under serious consideration by the Erie and the Lackawanna. Consolidation of closely adjacent passenger terminals at Jersey City and Hoboken, and common use of parallel main lines west of Binghamton, N. Y., are understood to be under particular scrutiny as possible sources for operating economies.

•

The ink was hardly dry on an agreement for a graduated rate of pay for conductors and brakemen working on freight trains of 81 or more cars before the Brotherhood of Railroad Trainmen announced it would seek pay increases of $2.50 per day "across the board." The new demand was announced on June 8 by W. P. Kennedy, president of the BRT. In addition, the union is currently negotiating on a demand to get six days' pay for five days' work for yardmen.

•

The Brotherhood of Locomotive Engineers will not join the projected merger of the CIO and the AFL. This decision was revealed by Grand Chief Engineer Guy L. Brown at the brotherhood's eighteenth annual international western convention at San Francisco, June 7. Behind the BLE's decision to become "the first union to reject membership" in the proposed merger, according to Mr. Brown, is its feeling that "governmental restrictions will surely follow such a gigantic organization."

•

The Santa Fe has bought controlling interest in the Toledo, Peoria & Western, by acquiring the 73,800 shares (82 per cent) of common stock held by the estate of the late George P. McNear, Jr. Santa Fe president, Fred G. Gurley, revealed that the purchase price was $9,963,000, or $135 per share. The transaction is subject to approval by the Interstate Commerce Commission. A fight looms because both the Pennsylvania and the Minneapolis & St. Louis are interested in acquiring control of the TP&W.

• • • *REPUBLIC Pressure Creosoted Wood

In wet or dry climate, acid or alkaline soil, wood that has been pressure creosoted the Republic way has a remarkable service record.

Time tested protection under all types of conditions is an important feature of Republic Creosoted Products.

Railroad Ties	Lumber	Cross Arms
Wood Blocks	Poles	Piles
	Anchor Logs	

Republic CREOSOTED PRODUCTS

REPUBLIC CREOSOTING COMPANY
MERCHANTS BANK BUILDING, INDIANAPOLIS 4, INDIANA

1931 24 CONSECUTIVE YEARS 1955
MODERN BALLAST CONDITIONING

BEFORE *"R.B.C.C." Service*

AFTER *"R.B.C.C." Service*

"R. B. C. C." ballast cleaning service has earned its outstanding performance record from 24 years of successful operation. Our 3 and 5 unit trains are entirely self contained on our own standard railroad equipment—No railroad cars are used or tied up.

"R.B.C.C." 5 unit equipment does a thorough ballast conditioning job, cleaning two center ditches or two shoulders or one of each at one trip.

"R.B.C.C." 3 unit equipment, self propelled, does a thorough ballast conditioning job, cleaning one shoulder at one pass on one side only.

"R.B.C.C." ballast cleaning or excavating service, complete with our own personnel and equipment, is handled on contract basis.

RAILWAY BALLAST CONDITIONING CORPORATION

RAND TOWER
MINNEAPOLIS, MINN.

METROPOLITAN BANK BLDG.
WASHINGTON, D. C.

600-Foot Tunnel Restored

with Horseshoe of Armco Liner Plate

The 600-foot tunnel that carries the Santa Fe "underground" at Richmond, California, needed rehabilitating. The problem was to restore safe strength with a minimum interruption to traffic.

Here's how the job was done. A lining of 5-gage Armco Liner Plate was installed, and the void between the new and the old grouted to prevent settlement. Individual pieces of Liner Plate were assembled into 6-foot lengths of the lining at a convenient spot outside the tunnel. The big horseshoe sections (span 28 feet, rise 15 feet) were then moved into position with on-track equipment and bolted together in the tunnel from scaffolding mounted on a flat car. This method allowed the tunnel to be cleared for traffic during construction.

In addition to this horseshoe shape, Armco Liner Plates are available for round, elliptical and arch structures in a wide range of sizes and gages. Corrugated metal design plus special joint design makes it the strongest of all tunnel liners on a pound-for-pound basis. Write us for complete data. Armco Drainage & Metal Products, Inc., 5725 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

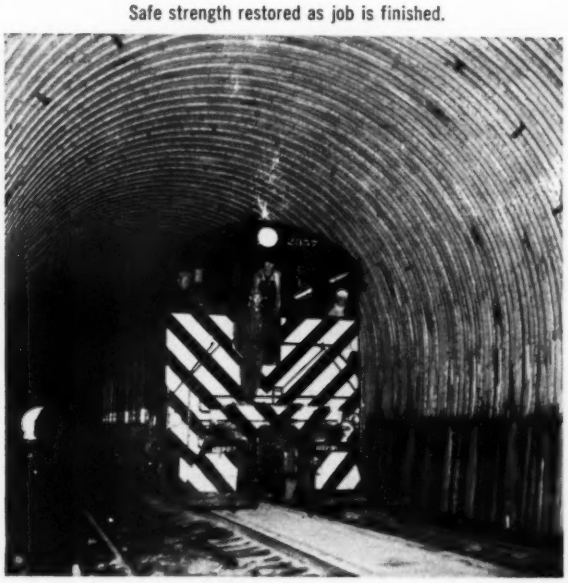
Liner Plate sections were bolted together outside the tunnel.

Sections of the horseshoe were positioned by on-track equipment.

ARMCO LINER PLATES

ARMCO

Safe strength restored as job is finished.



SPEED UP RAIL RENEWAL OPERATIONS

. . . use the NORDBERG *BALLAST ROUTER* for quick removal of troublesome HIGH CRIB BALLAST

Designed for removing high crib ballast which would interfere with the operation of adzers in rail renewal operations, the Nordberg *Ballast Router* cuts a flat trench, the depth of which can be set by an adjustable stop, and sweeps the area of the tie to be adzed.

Operated by two men, the *Ballast Router* easily and quickly removes high ballast, improves track drainage, and simplifies application of rail anchors. No objectionable void is left in the crib under rails which would require filling later.

The digging element incorporates years of complete cribbing experience gained with the Nordberg Cribex® . . . and the entire *Ballast Router* is built with the same rugged construction found in all other efficient Nordberg Railway Track Maintenance Machinery.

For complete information on how the Nordberg Ballast Router can reduce maintenance time and expense, write for your copy of Bulletin 240.

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"Mechanical Muscles"®

ADZING MACHINE • BALLAST ROUTER • CRIBEX® • BALLASTEX® • SCREENEX® • HYDRAULIC and MECHANICAL SPIKE PULLERS • SPIKE HAMMER • TIE DRILL • POWER JACK • POWER WRENCH • RAIL DRILL • RAIL GRINDERS • TRACK SHIFTER • DSL® YARD CLEANER • TRAKLINER • GANG TAMPER • DUN-RITE® GAGING MACHINE • GANDY—TIE PULLER and INSERTER

NORDBERG MFG. CO., *Milwaukee, Wis.*

NORDBERG MACHINERY

WHEN YOUR TRACK BALLAST NEEDS CLEANING...

CALL ON

SPENO
BALLAST CLEANING SERVICE

SPENO contract service eliminates capital investment by Railroads in this single-operation equipment.

SPENO'S double screening system gives a thorough cleaning in less time than a single screening by other mechanical means.

SPENO Ballast Cleaning Equipment does not foul train traffic on adjacent tracks.

SPENO'S record of high production and low cost can be verified by the sixteen Class I railroads now served.

Just ask the Railroads that have used us.
FRANK SPENO RAILROAD BALLAST CLEANING CO., INC.
306 North Cayuga St., Ithaca, N. Y.

REDUCE INVENTORIES BY USING Q AND C DERAILS

Q and C Hand Throw Derails are of simple design, durable, and effective. They may be adjusted in the brackets to fit a range of rail sections, eliminating the necessity of carrying many sizes in stock, thus reducing inventories.
We also manufacture Sliding Type and Portable Derails, likewise adjustable for many sizes of rails.
Specify Q and C Derails to insure safety and economy.

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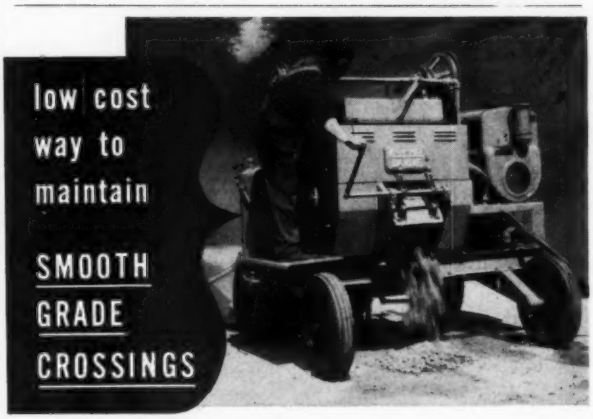
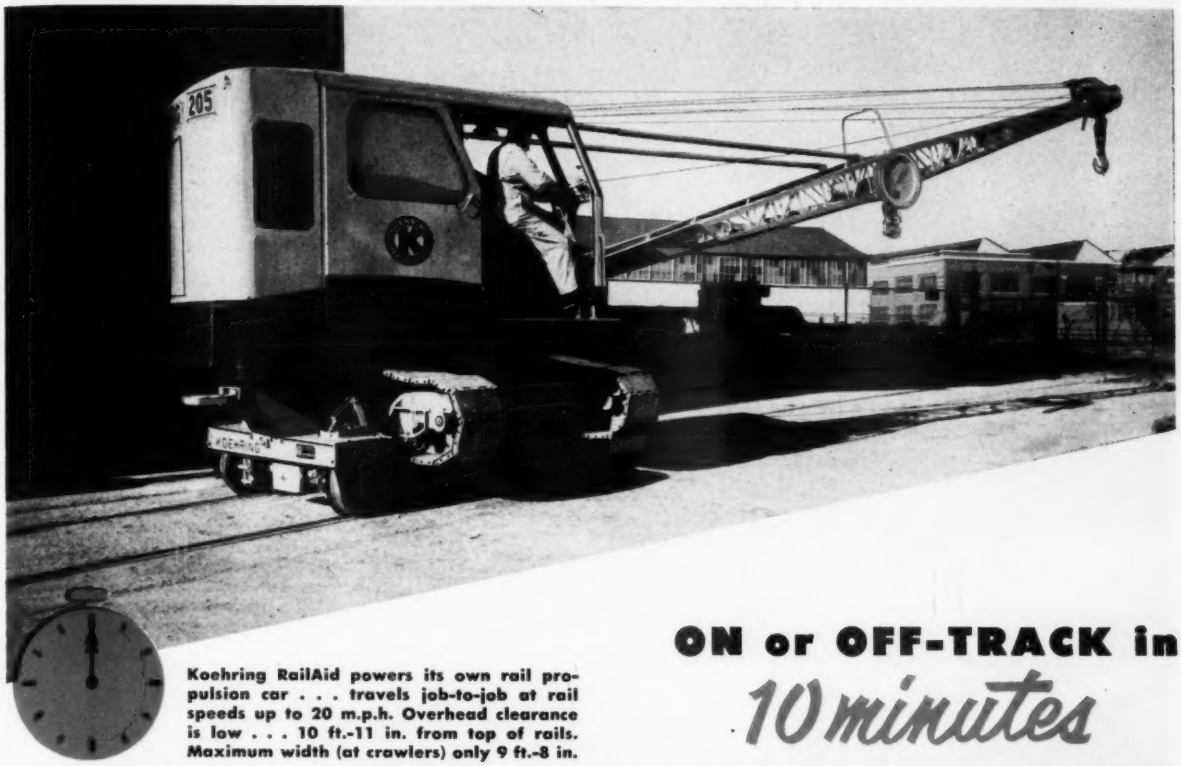
low cost way to maintain SMOOTH GRADE CROSSINGS

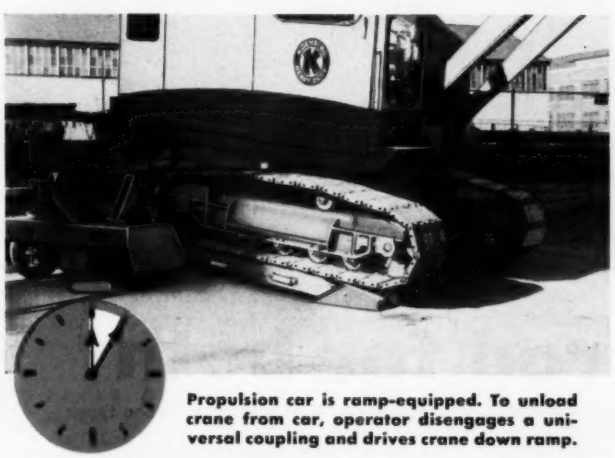


For timely, economical maintenance of grade crossings, put Kwik-Mix Bituminous Mixers to work on your line. As mobile mix plants on pneumatic tires, they can be moved anywhere throughout the division to do patchwork, or stockpile cold-mix at various sites. Or, stationed at centrally-located points, close to the source of materials, Kwik-Mix Bituminous Mixers are readily set up as central-mix plants. On stationary installations, they can be mounted on skids on elevated platform. There are 2 sizes — 10 and 14 cu. ft. Both are available with tower loader for overhead discharge. See your Kwik-Mix distributor or write for catalog.

Mail to: **KWIK-MIX CO.**, 3029 W. Concordia, Milwaukee 16, Wis.
Send us literature on: ☐ 10 ☐ 14 cu. ft. Bituminous Mixers
NAME .....
TITLE .....
COMPANY .....
ADDRESS KM389RTS
(Koehring Subsidiary)



Koehring RailAid powers its own rail propulsion car . . . travels job-to-job at rail speeds up to 20 m.p.h. Overhead clearance is low . . . 10 ft.-11 in. from top of rails. Maximum width (at crawlers) only 9 ft.-8 in.



Propulsion car is ramp-equipped. To unload crane from car, operator disengages a universal coupling and drives crane down ramp.

Crane lifts its propulsion car off the track . . . clears the right-of-way for uninterrupted rail traffic. Entire loading or unloading operation takes less than 10 minutes!

ON or OFF-TRACK in *10 minutes* with Koehring RailAid®

Koehring heavy-duty RailAid combines all the advantages of a self-propelled track crane with the flexibility of a free-moving, off-track crawler crane. The crane works on or off the propulsion car . . . safely lifts 6.9 tons on the car . . . 8.9 tons on the ground.

RailAid travels at rail speeds up to 20 m.p.h. forward and reverse . . . is self-powered through extended lower traction shaft of crane and universal coupling on rail propulsion car. Crane loads or unloads itself on ramp-equipped car in less than 10 minutes. It sets car on and off-track . . . clears the rails for normal traffic. Work of crane and the road crew is uninterrupted during the complete shift.

Usefulness is unlimited . . . RailAid loads and unloads materials in yards and along the line, lays rails, places timbers and trusses on bridge construction and repairs, speeds scrap handling and salvage. Readily converts to magnet crane, pile driver, clamshell, dragline, ½-yard shovel or hoe.

K455RTS

KOEHRING COMPANY, Milwaukee 16, Wis.

Send us more information on Koehring RailAid.

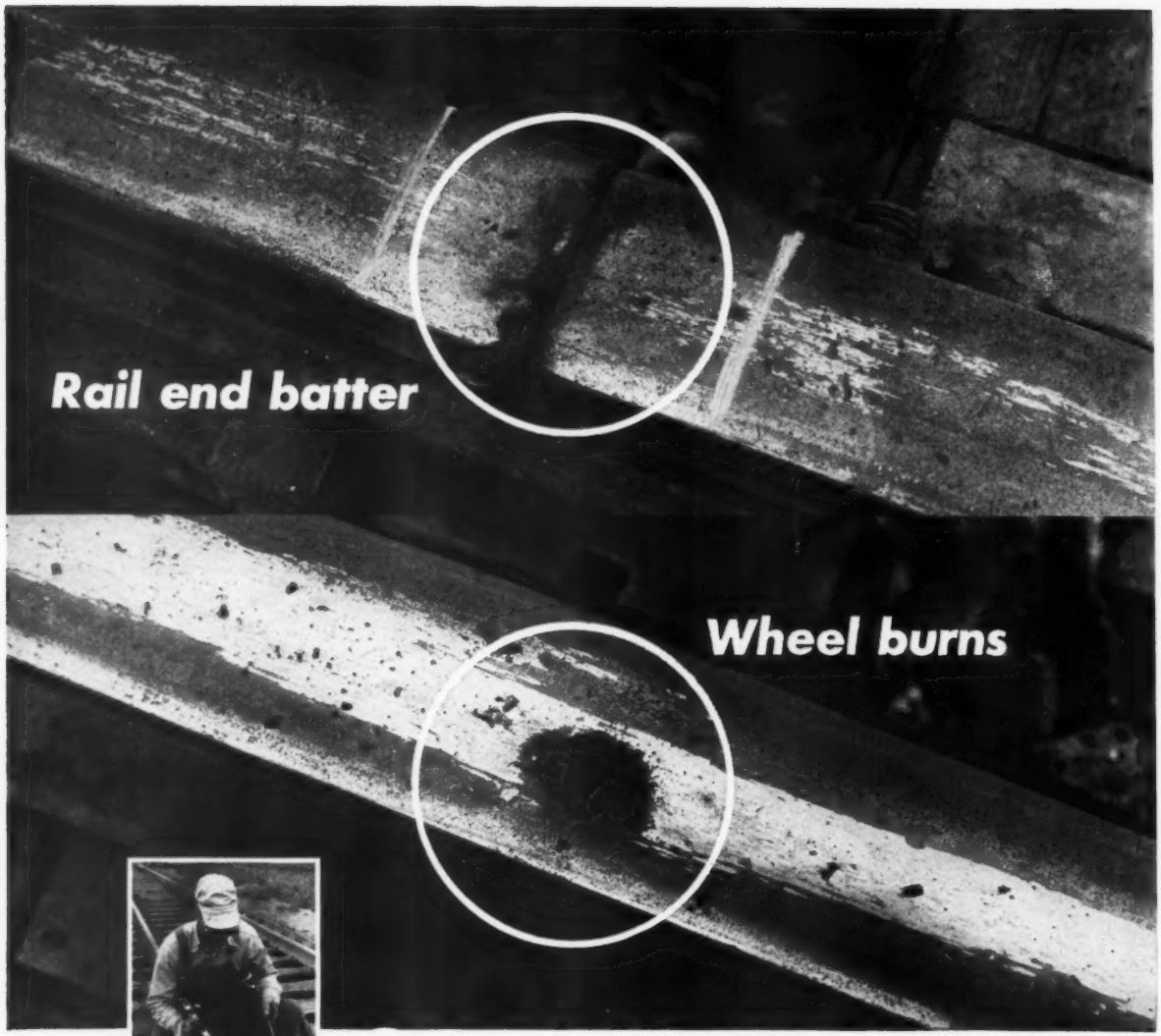
NAME_____

TITLE_____

COMPANY_____

DIVISION_____

ADDRESS_____



one rod for both

Airco Railroad Rod provides a single answer to these two common types of rail damage. You can use it to build up battered and chipped rail ends, or, by a simple adjustment of the welding torch's oxyacetylene flame, to fill in and smooth out rail burns. Hardness of the deposit is 251 to 350 Brinell—well within the required range for both applications. Airco Railroad Rod is standard on many major railroads, not only because it eases stocking problems but also because of the high quality of its deposit.

Your Airco railroad representative will be glad to arrange an actual demonstration. Why not get in touch with him today?

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Products of the divisions of Air Reduction Company, Incorporated, include: **AIRCO** — industrial gases, welding and cutting equipment, and acetylenic chemicals • **PURECO** — carbon dioxide, liquid-solid ("DRY-ICE") • **OHIO** — medical gases and hospital equipment • **NATIONAL CARBIDE** — pipeline acetylene and calcium carbide • **COLTON** — polyvinyl acetates, alcohols, and other synthetic resins.

WHAT DIFFERENT JOBS WILL IT DO?

HOW WELL WILL IT PERFORM?

WILL IT COST MUCH TO MAINTAIN?

HOW LONG WILL IT LAST?

Consider the Answers to these Questions before you buy any excavator

HERE'S HOW BUCYRUS-ERIES MEASURE UP

What Different Jobs Will It Do? You can convert to another front end right on the job, quickly and easily, without major machinery changes. For example, the 22-B shown here converts from dragline to shovel by simply adding the crowd chain unit and reversing one brake. Crane boom lengths can be increased for longer, higher reach simply by adding insert sections. Jib extensions can be added without dismantling boom point machinery.

How Well Will It Perform? Fast, dependable operation characterizes the performance of Bucyrus-Erie draglines with their ability to handle long booms without loss of capacity, to dig heaping bucket loads, to merge dig-swing-dump motions into a smooth, efficient work cycle. The all-welded booms of deep box-section construction are light in weight, yet have ample strength to permit fast dragline work. Wide-spread boom feet minimize swing stresses.

Will It Cost Much to Maintain? You're ahead to start with because there are actually fewer parts in a Bucyrus-Erie excavator — which means fewer parts to wear out, to replace and stock—and far less dead weight. Clutch and brake adjustments can be made in minutes and hold for long periods. The engine chain drive and every gear and pinion (except swing pinion and rack) are fully enclosed and running in oil. Grease fittings are grouped at central easily-accessible locations.

How Long Will It Last? It's a tradition in the excavator field that Bucyrus-Eries outlast other makes. Bucyrus-Erie Individual Design makes sure every part in each machine is engineered and built to handle a specific rated capacity. There's no over-dippering to create "new" models, no over-powering to cause undue wear and breakage. With normal care, your Bucyrus-Erie excavator will last many, many years with a minimum of maintenance.

Get the Full Story *on the complete line of Bucyrus-Erie excavators from 3/8 to 4-yd. from your distributor. All are fully convertible; shovel, dragline, crane and clamshell — plus dragshovels on machines through 2½-yd.*

127E55C

75 YEARS OF SERVICE TO MEN WHO SHAPE THE EARTH

BUCYRUS ERIE

South Milwaukee, Wisconsin

1880 • 1955

See how TIMKEN® bearings help keep this car out of the shops

MOUNTED in a spring-cushioned housing, Timken® bearings on the axles of this Kalamazoo 27 AW-F are one reason why the car's maintenance requirements are so low.

Because these Timken axle bearings take both radial and thrust loads, the wheel gage is precisely maintained. No extra thrust bearings or washers are needed, which eliminates one more source of maintenance.

The true rolling motion of Timken bearings plus the smooth finish of their rollers and races practically eliminate friction. Wear is minimized, costly breakdowns avoided.

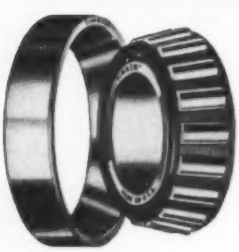
Line contact between rollers and races on Timken bearings provides load-carrying capacity to spare. They take heavy shock loads with ease, prevent car breakdowns on right of way.

This car has a special reverse transmission which allows the car to travel at equal speeds in either direction. Timken bearings in the transmission keep it smooth-acting and trouble-free.

Look for Timken bearings on the equipment you buy. If you build equipment, talk to us about bearing selection. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

KALAMAZOO MANUFACTURING COMPANY uses Timken bearings on the axles and reverse transmission for long life with minimum maintenance.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

OUR OWN NICKEL-RICH ALLOY STEEL MAKES TIMKEN BEARINGS TOUGHER

Nickel makes steel tougher. And we don't skimp on nickel in the fine alloy steel we make for Timken bearings. Our steel-making specialists use the exact amount to give Timken bearings the toughness they need to withstand shock, last longer. We control the quality of Timken bearings at every step in production—from melt shop through final bearing inspection.

NOT JUST A BALL ◯ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ⬯ AND THRUST →⬯← LOADS OR ANY COMBINATION

WOODINGS-VERONA

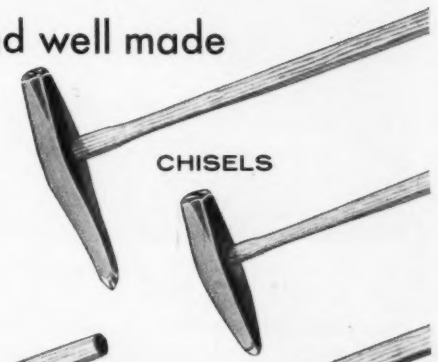
VERONALLOY

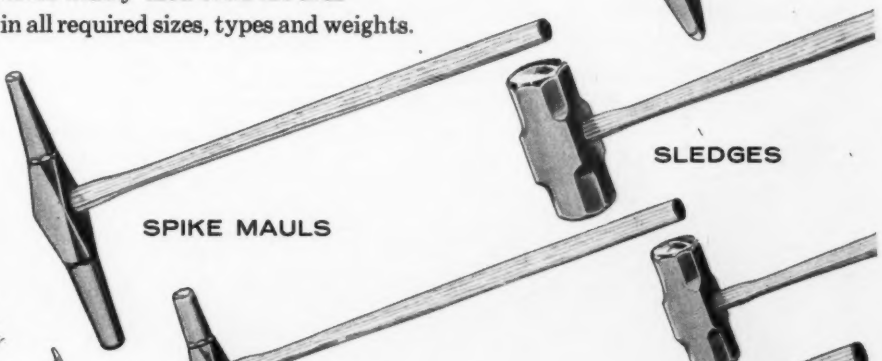
RAILROAD TOOLS

"Feel right" because they are properly balanced

Last long because they are tough and well made

VERONALLOY railroad tools have the features you demand—highest quality alloy steels (heat treated), well-balanced design, carefully ground edges and faces, finest hickory handles. Each tool is checked by Magniglow inspection—and of course, they are made in strict conformity to A.R.E.A. specifications. A few of the more widely-used tools are illustrated here. They are made in all required sizes, types and weights.





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Write for catalog and prices

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Backed by more than 40 years of accumulated know-how, and equipped with unmatched research and engineering facilities to help customers solve metal-working problems, LINDE is helping the nation's railroads to consistently improve production and lower costs.

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"Linde" and "Oxweld" are registered trade-marks of Union Carbide and Carbon Corporation.

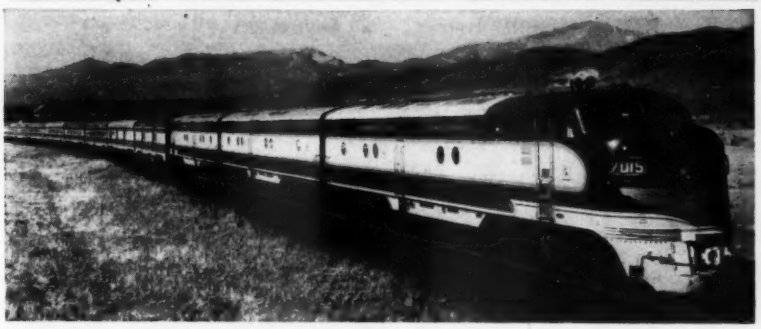
Supplying to railroads the complete line of welding and cutting materials and modern methods furnished for over forty years under the familiar symbol - - -

"Detecting and replacing defective rails is of prime importance to our operation's safety and economy," states Mr. A. B. Chaney, Assistant Chief Engineer, System Maintenance, Missouri Pacific Lines. "That's why we have used Sperry Rail Service to test Missouri Pacific rail in track since 1931."

This stretch of track near Knobnoster, Mo., lies on the route of the original Pacific Railroad of Missouri, forerunner of present day Missouri Pacific Lines and the first railroad constructed west of the Mississippi River. "Testing frequency of this and other track varies from four to twelve months," Mr. Chaney continues, "depending on density and class of traffic, age and condition of rail, and record of detected and service failures."

MISSOURI PACIFIC LINES

Get high track safety at low cost with SPERRY RAIL SERVICE



The Colorado Eagle, Mo-Pac's crack overnight streamliner between St. Louis and Colorado points, speeds through scenic Rocky Mountain territory. With delivery early this year of 66 new diesel road switchers, Missouri Pacific has completed dieselization of its far-flung 10,000-mile system. Radio and CTC, centralized checking for LCL freight, broad line and grade revision, new freight cars and modernized diesel facilities are placing Mo-Pac in a strong position to handle increased carloadings with speed and safety.

"Good teamwork is the rule and gets economical results," says Mr. Chaney. "Test itinerary for a coming year is set up in December and distributed to all personnel concerned. During test operations, daily movements of the Detector Car are coordinated by a Mo-Pac representative riding with the Sperry crew." Constant efforts by Sperry engineering and operating staffs to improve equipment and methods have resulted in greater testing efficiency than ever before.

Sperry

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SPERRY RAIL SERVICE

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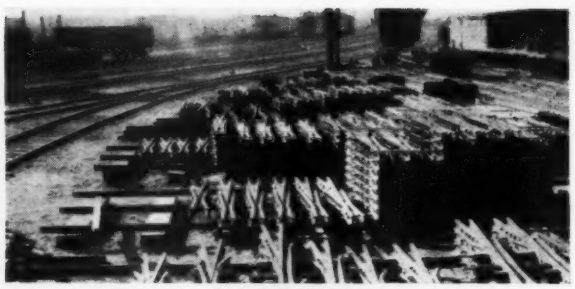
Since 1928, Sperry has pioneered the field of practical nondestructive testing. Today, Sperry service offers America's most complete range of modern ultrasonic and induction instruments for testing rail, rolling stock and stationary equipment . . . time-proved assets to maintenance economy. Write or call for complete information and a working demonstration today.

Rail Joints

Bridges

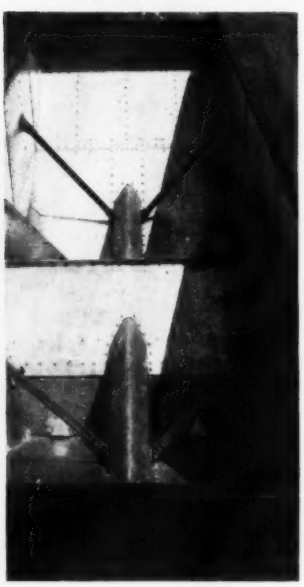


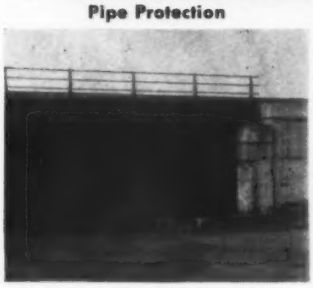
Stored Materials

Signal Equipment

Car Journals

Pipe Protection





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Steel Tanks

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Car Construction

There is a DEARBORN NO-OX-ID®
for every railroad application

NO-OX-ID PROTECTS . . . NO-OX-ID SAVES

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Greatest Safety . .
. . More Economy . .
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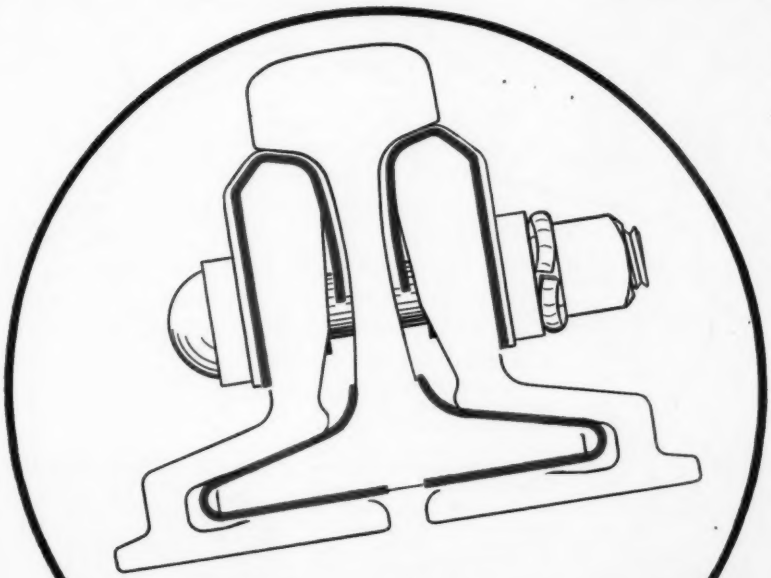
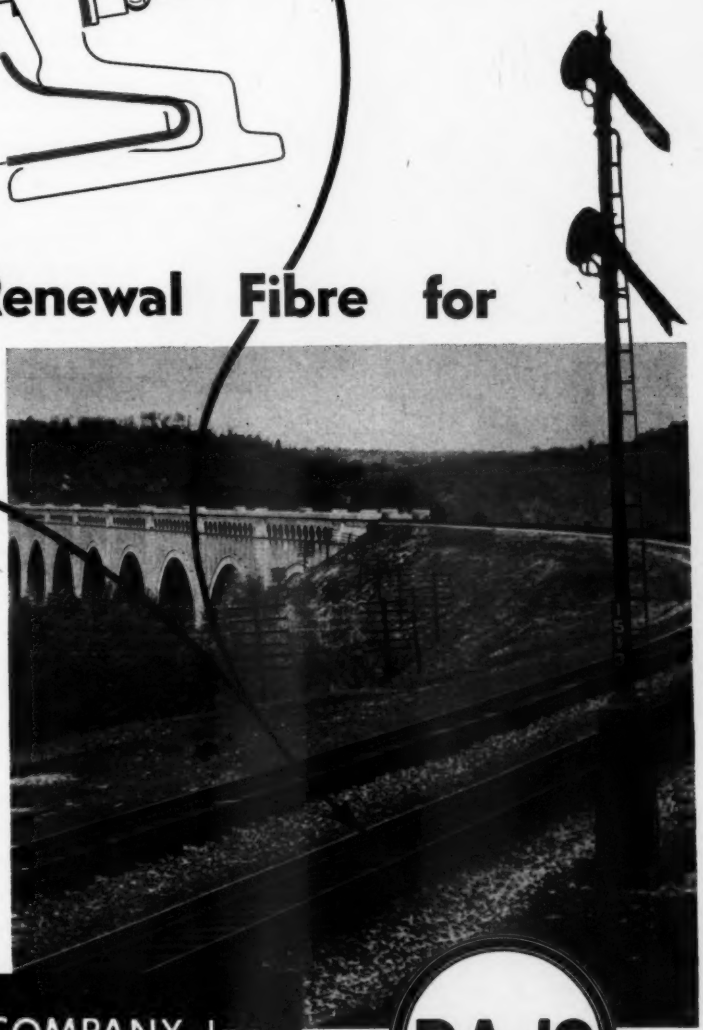


Illustrated at left is our Armored Continuous Insulated Joint, equipped with correctly formed Fibre Head Pieces shown here in red.

RAJO Armored Insulated continuous joints are used on leading railroads because of their dependability and extremely long life.

RAJO Renewal Fibre for Continuous Rail Joints



RAJO Fibre Renewal Parts are made of—

1. The best vulcanized fibre obtainable
2. They are identical to original parts—insuring a perfect fit.
3. RAJO Renewal Fibre is carefully checked—the same care as given to the original parts.
4. Field service for fibre and insulated joints is provided by engineer specalists

RAJO has been proved to be the most satisfactory renewal fibre for railroad service. This brand has all the foregoing quality advantages.

THE RAIL JOINT COMPANY Inc.
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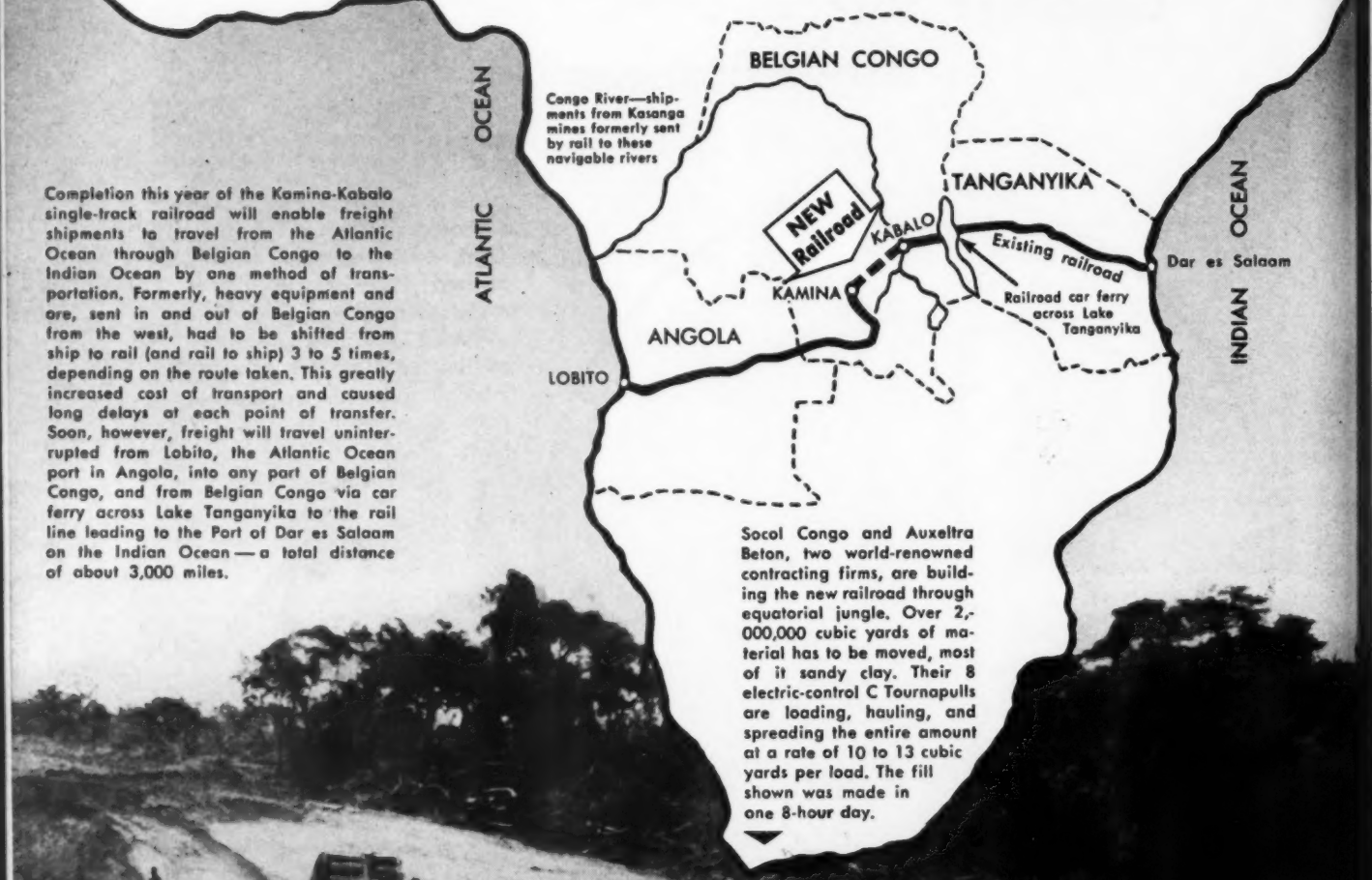
RAJO

FIRST railway across



Completion this year of the Kamina-Kabalo single-track railroad will enable freight shipments to travel from the Atlantic Ocean through Belgian Congo to the Indian Ocean by one method of transportation. Formerly, heavy equipment and ore, sent in and out of Belgian Congo from the west, had to be shifted from ship to rail (and rail to ship) 3 to 5 times, depending on the route taken. This greatly increased cost of transport and caused long delays at each point of transfer. Soon, however, freight will travel uninterrupted from Lobito, the Atlantic Ocean port in Angola, into any part of Belgian Congo, and from Belgian Congo via car ferry across Lake Tanganyika to the rail line leading to the Port of Dar es Salaam on the Indian Ocean — a total distance of about 3,000 miles.

Socol Congo and Auxeltra Beton, two world-renowned contracting firms, are building the new railroad through equatorial jungle. Over 2,000,000 cubic yards of material has to be moved, most of it sandy clay. Their 8 electric-control C Tournapulls are loading, hauling, and spreading the entire amount at a rate of 10 to 13 cubic yards per load. The fill shown was made in one 8-hour day.

ss equatorial Africa near completion

New 300 mile section will take 2 years to build; first 1150 miles took 25 years

Fifty years ago, the governments of Belgium, Great Britain, and Portugal moved to improve transportation into the fabulously wealthy Katanga copper country of Belgian Congo. An 1150-mile single-track railroad line was started across Angola from the Atlantic Ocean. A dozen contracting firms battled the problems of rock, sleeping sickness, malaria, and impure water. Over 7,000 hand laborers toiled day after day to push the track forward a rail length at a time. Despite this great force, the project wasn't completed until 1928 — 25 years after its start.

25 machines faster than 7,000 men

Today, a 300 mile extension of this first major railroad line in western Africa, has been started. It will connect with the Congo-Tanganyika line and give equatorial Africa its first transcontinental railroad. But now, instead of 7,000 laborers, 25 high-speed scrapers and tractors on rubber are doing all the earthmoving. Instead of 46 miles of track a year, the present contractors will put in 150 miles a year. Societe Continentale et Coloniale de Construction (SOCOL) and Auxeltra Beton, both of Leopoldville, are handling their 2,000,000 yard half of the project with 8 Tournapull-Scrapers and 10 LeTourneau-Westinghouse Tournatractors. The other half is being handled by the B.C.K. Company of Elisabethville, with 4 Tournapull-Scrapers and 3 Tournatractors.

Electric controls simplify training

All firms report a great saving in labor costs. Laborers recruited from some of the same areas which supplied the 1903-28 project are operating the machines. These men had no previous experience on operation of earthmoving equipment, yet their training took only a few days. Today — thanks to simple "push-button" electric control systems — they are moving earth at a rate similar to that set by fully-experienced operators. Each Tournapull — on typical 1800 ft. cycles — loads, hauls and spreads 100 cubic yards of earth per hour.

For lower-cost contract grading it will pay you in time and money to call in contractors with LeTourneau-Westinghouse machines. Tournapulls also can help you on your own maintenance and construction dirtmoving. Let us arrange a demonstration for you. Write for details.

Tournatractor – Tournapull—Trademark Reg. U.S. Pat. Off. TP-755-RR

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

Non-stop turn in 30 ft. cut

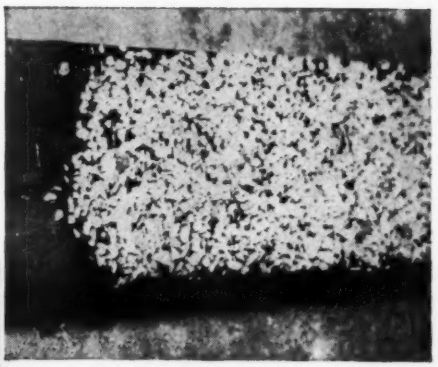
One of the major advantages of the Tournapull is its ability to turn around non-stop in narrow areas like this 30 ft. single track roadbed cut.

Flick of dashboard switch starts turn. Prime-mover swings under power to form 90° angle with scraper. Machine turns easily within its own length.

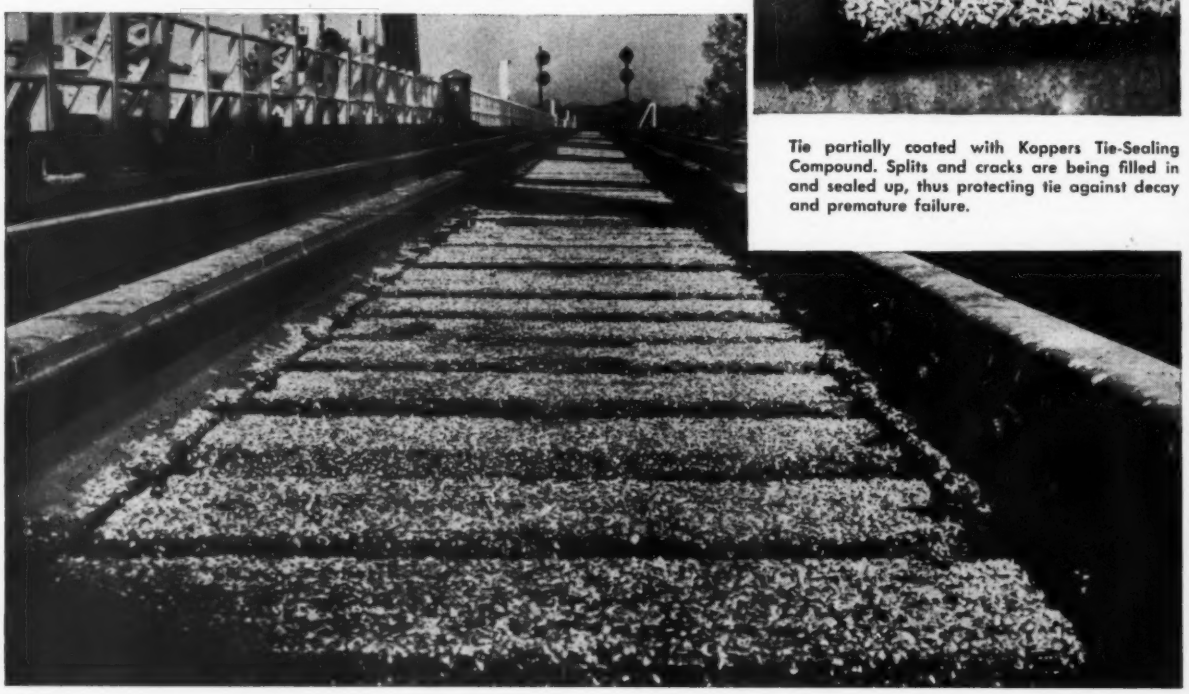
This extremely important feature allows contractors to save time and money because they need not excavate wide turn-around areas at sides of cut.

Tournapull begins to straighten out for push-loading by Tournatractor (in background). Scraper bowl carries 16 heaped yards per load.

Prevent premature tie failure with Koppers Tie-Sealing Compound



Tie partially coated with Koppers Tie-Sealing Compound. Splits and cracks are being filled in and sealed up, thus protecting tie against decay and premature failure.



Koppers Tie-Sealing Compound is adding years of service to these bridge ties. Covering of fine stone provides a tie surface that is well protected against the danger of costly fire.

To FIND OUT exactly why ties fail prematurely, a leading railroad recently studied 400,000 defective ties. The conclusion: *over fifty per cent* of the ties which failed were victims of mechanical damage and weather . . . primarily splitting or plate cutting.

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RAILWAY
TRACK and STRUCTURES

Subject:

Dear Readers:

Formula for Success

Do you want to be successful in your job? If your answer is "yes"—and you are completely in earnest—the greatest danger you face is getting into a rut. It has been said that a rut is a grave open at both ends, and no truer statement has ever been made. Anyone who allows himself to become firmly fixed in a rut will discover eventually that his hopes for further advancement in the business world have suffered a death blow.

What makes this problem so perplexing is that a person may have allowed his thinking to become channelized without being aware of it. This can happen because we must, to some extent, live our lives by habit and routine. If we didn't do some things this way—dressing, shaving, eating, getting to and from work, etc.—if we had to think out each individual move, life would quickly become intolerable.

So it is with companies and other organizations as well as with individuals. Practical considerations require that, to a large extent, organizations of any kind function in accordance with established methods and procedures. Otherwise, for instance, railroad maintenance-of-way departments would be unable to do their work with any degree of efficiency or effectiveness.

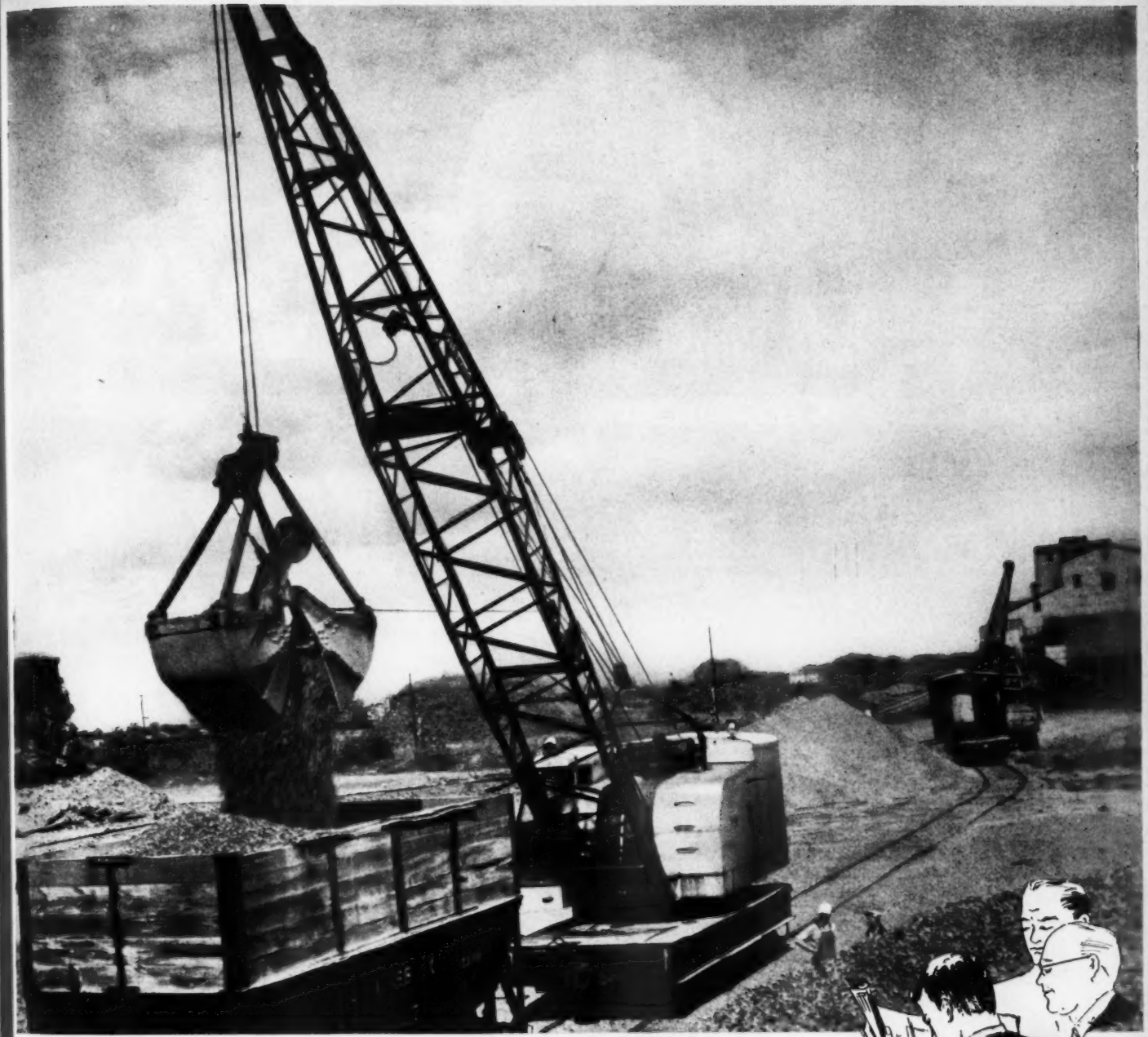
With the activities of individuals and organizations thus determined largely by established precedent, it is easy to see how there would be a tendency for all aspects of thinking to settle into a fixed pattern. This is a normal human tendency but it can be fatal for companies and individuals who are up against competitive situations. For you can always be sure that plenty of people will be successful in avoiding the trap. Driven by ambition or a desire to excel, they manage to keep pushing forward all the time, while their less ambitious or more complacent colleagues go on doing things in the same old way.

This explains why some people advance faster and farther than others, and why some maintenance-of-way departments gain reputations for being "progressive," while others are classed as "conservative" or "backward." There is a risk, of course, in getting into unchartered waters, but even greater danger lies in wait for those whose aim in life is to "play it safe." The rut they inhabit might indeed prove to be a grave for their hopes of success.

There is another consideration that makes this problem more difficult now than ever before. There was a time when progress in industry generally, and in maintenance of way in particular, occurred at a snail's pace. Under such conditions, a person or a company could lag a little behind the rest and still not get into difficulties.

Not so today. Technological progress is occurring so rapidly that new methods or equipment are sometimes obsolete even before they have been generally adopted. That's why we can't permit ourselves to fall into a rut even temporarily; when we climb out it might be too late to catch up with progress.

MHD



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THE RACOR Snow Blower

EASY, SAFE AND ECONOMICAL SNOW REMOVAL FROM SWITCHES BY COMPRESSED AIR

Easy to Install • Easy to Maintain • Safe and Economical to Operate

ADAPTABLE TO REMOTE CONTROL ELIMINATES THE NEED FOR MANUAL ATTENTION DURING SNOW STORMS

The RACOR SNOW BLOWER is a mechanical device designed to keep switches clear of snow by the use of intermittent blasts of compressed air. Simple in construction, it consists of a source of compressed air, an air filter, an anti-freeze injector, a cycling tank, an air switch, an air valve and two manifolds equipped with adjustable nozzles.

SOURCE OF AIR SUPPLY

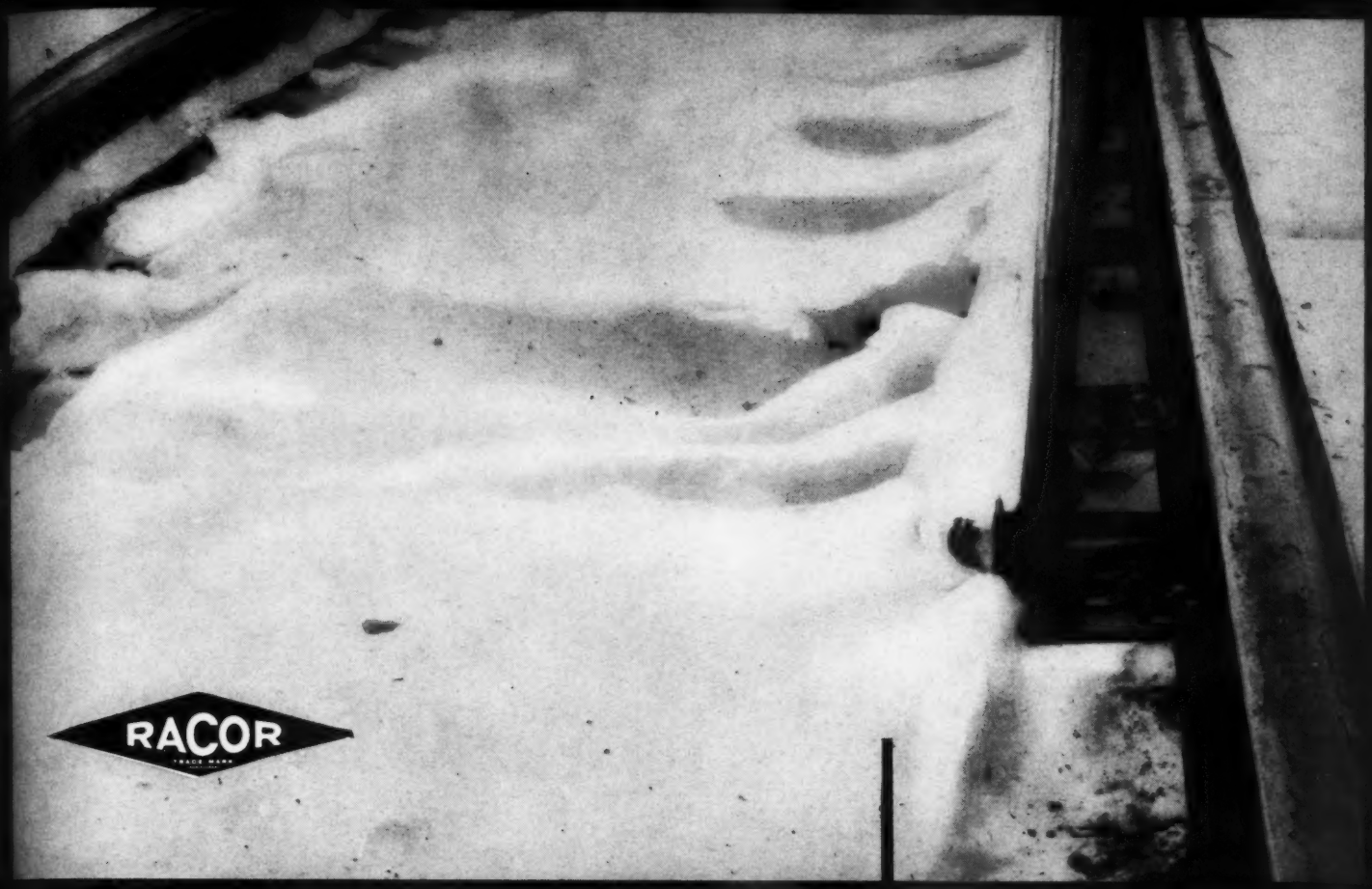
The compressed air can be supplied either from a small individual compressor for a particular switch or from a larger compressor with sufficient capacity to serve several switches; or from a central source of supply. The manifolds are attached to the stock rails of switches in such a manner that there is no interference when the switch points are thrown.

HOW IT WORKS

The air passes through the filter, the anti-freeze injector, the cycling tank and then through connecting pipes into the manifolds. The air speed created by the blowing cycle, at a rate of approximately sixty miles an hour, removes snow, dirt, etc., out of the opening between the switch points and the stock rails. The air switch is set to operate the air valve when predetermined pressures are reached in the cycling tank. This cycle is continually repeated and can be varied within certain limits, but the usual cycle develops a blowing time of about one-tenth of the time of the cycle — the blowing taking about four seconds with the cycling tank re-charging in about thirty-six seconds. This timing was found to be adequate to keep a switch clear of snow during a total snowfall of 64½" in six days, with an air supply of approximately 100 p.s.i.

Electric cycling can be substituted for pneumatic cycling by using an electric timing device that controls a solenoid valve. This timing device, when employed, is connected directly to the air supply and will eliminate the use of the cycling tank.

RACOR engineers will gladly recommend the type of cycling best suited for any particular location.



ADVANTAGES OF RACOR SNOW BLOWER

The RACOR SNOW BLOWER has many advantages, the more important being: *Extremely low operating costs* — by far the lowest of any other snow removal method. *No melted snow*, hence no problem of drainage or icing or necessity of removal of ice formed from melted snow. *No flame to blow out* from high winds or passing trains. *No danger of fire* as a result of leaking oil from tank cars or from diesel engines that might stop over switch. *No chance to burn up ties or insulation.* If desired, the RACOR SNOW BLOWER can be operated by remote control.

Foreign matter such as dirt, sand and top soil which might blow into the switch with snow, is blown out and not left as a residue, as is often the case when snow is melted through heating methods. The introduction of alcohol in atomized form through the anti-freeze injector, combined with the effect of blowing dry compressed air has proved very effective during sleet and freezing-rain conditions.

SAFETY

Safety is perhaps the most important advantage of all, as employees are not required to manually clear switches under traffic during snowstorms, usually the period of poorest visibility.

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RACOR STUDS

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AUTOMATIC SWITCH STANDS

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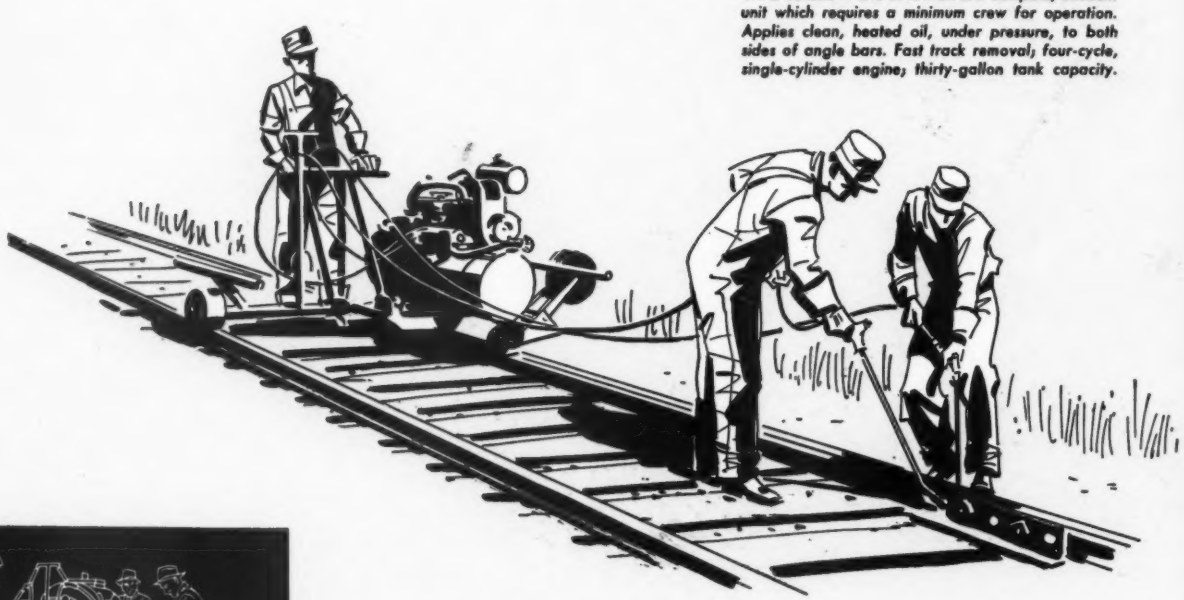
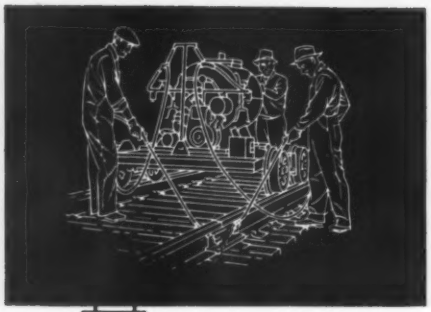


***W72 SERIES A OIL SPRAYER** is a compact, efficient unit which requires a minimum crew for operation. Applies clean, heated oil, under pressure, to both sides of angle bars. Fast track removal; four-cycle, single-cylinder engine; thirty-gallon tank capacity.*



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It is significant, we think, that Fairmont—and Fairmont only—has devoted its skill and experience exclusively to the field of railway maintenance. For it is this singular devotion that has enabled Fairmont to so consistently show the way in building better, more efficient maintenance products. And as evidence of this leadership, we offer the two pieces of Fairmont equipment illustrated above. They are the W61 Series B and the W72 Series A Oil Sprayers . . . almost universally recognized and accepted as the standards of operation in the area of rail lubrication. To be sure, these units differ in their size, in their capacities and in their cost. But each is the result of the most scientific design . . . of the most comprehensive field-testing . . . and of the most careful craftsmanship and construction in the industry. If you are currently considering the purchase of new rail lubrication equipment, we urge you to study the brief descriptions of these units . . . and to contact us for further, more detailed information. You will find either a typical example of Fairmont leadership—and of the kind of "on-the-job" performance that has made Fairmont *first in maintenance!*

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Published monthly by the

SIMMONS-BOARDMAN PUBLISHING CORPORATION

79 West Monroe St., Chicago 3

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New York 7,
30 Church Street

Washington 4, D. C.
1081 National Press Bldg.

Cleveland 13,
Terminal Tower

Portland 5, Ore.
835 Terminal Sales Bldg.

San Francisco 4,
244 California Street

Los Angeles 17,
1127 Wilshire Blvd.

Dallas 19,
3908 Lemmon Ave.

Coral Gables, Fla.
1810 Ponce De Leon Blvd.

Foreign Representatives

Sibley-Field Publishing Company Ltd.
48 London Wall
London E.C. 2, England

Linder Presse Union GMBH
International Advertising Agency
(16) Frankfurt a.Main
Wittelsbacher Allee 60,
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Subscription price to railroad employees only in the U.S., U.S. possessions and Canada, $2.00 one year, $3 two years, payable in advance and postage free. All other countries, $8 one year, $16 two years. Single copies 50¢. Address correspondence concerning subscriptions to Robert G. Lewis, vice-president, 30 Church Street, New York 7.

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Member of the Associated Business Papers (A.B.P.) and of the Audit Bureau of Circulations (A.B.C.), and is indexed by Engineering Index, Inc.

PRINTED IN U.S.A.

RAILWAY

TRACK and STRUCTURES

July, 1955 **Vol. 51, No. 7**

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Chemical control of brush has come into its own. On road after road, the savings have been substantial over other methods. One of the pioneers in the successful application of brush killer, the Bogle organization has the right kind of chemicals for treating brush, men who know how to apply them and a fleet of modern, up-to-the-minute spray cars. You are free to draw on the wealth of experience we have accumulated in the treatment of a wide variety of brush conditions.

We shall gladly work out a program with you based on your own conditions and covering brush or weed applications, or both.

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They Deserve a Fair Chance

How often have you overheard conversations that go something like this:

"Did you try out that new gadget I sent you the other day?"

"Yes, but it didn't work out."

"What do you think we should do about it?"

"Nothing. It doesn't fit our needs or conditions, so I recommend we forget all about it."

New products or devices of one kind or another—many of them quite revolutionary—are constantly being offered for the use of maintenance of way and structures departments. A portion of them will doubtless prove to have merit; others will be found to be unsuited for railroad service. But all of them deserve a fair trial before being accepted or rejected.

It is true that most maintenance-of-way departments are constantly experimenting with new products. The important question is whether the tests are of such a character or scope as to show what the product can really do. Suppose it doesn't perform too well in a single test. Why did it fail? Was it improperly used or installed? Were the results appraised in an objective manner? Is it possible that good results could be obtained under different conditions or at another location?

Until these questions have been asked—and answered satisfactorily—a definite decision to discard the product under test is premature.

It might be interesting to speculate on the number of meritorious products that have been rejected because they didn't perform well when tested in a haphazard manner or under impossible conditions. Such speculation, however, would accomplish no useful purpose. The fact is that when a new development is rejected after only perfunctory use or testing, we are not only doing a disservice to others but very possibly to ourselves as well because actually it may have considerable merit.

Are Your Costs Current?

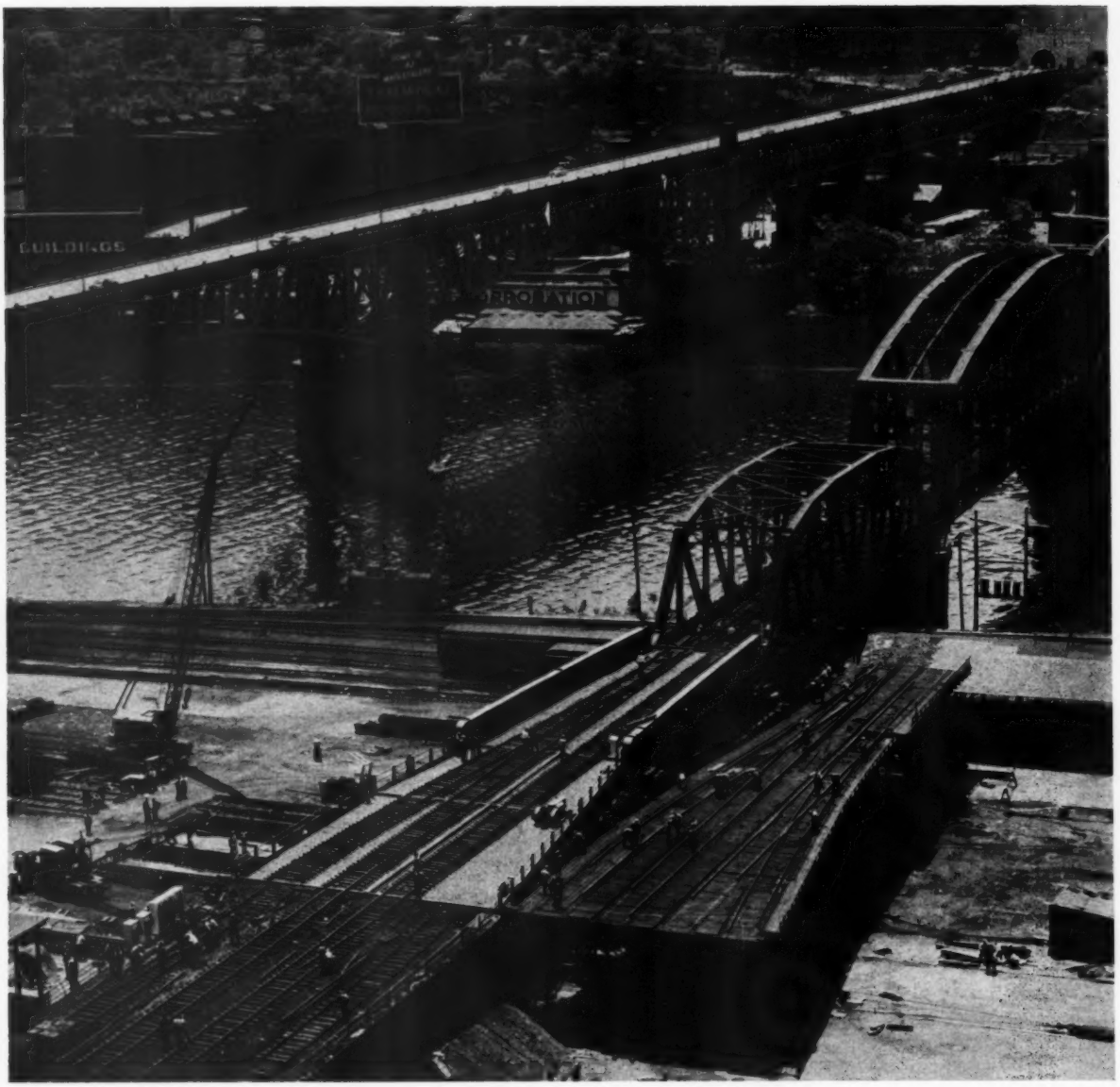
Generally speaking, cost data available to railway maintenance officers from the division level upward become available two to six weeks or more after the work is completed. Such data, which might be termed "historical," provides little information usable for anything but a "post mortem" review of work already accomplished. They are unsuitable for current use in pointing up danger signs from loose or uneconomical practices that may be consuming maintenance dollars today.

One of the crying needs of modern railroad technology is an adequate "live" cost-accounting system which will detect the leaks of maintenance dollars as they occur. What independent contractor or business could or would long remain solvent without such a live accounting system? The contractor's solvency is based on an intimate knowledge of production capacity, operating costs and efficiency of each man and machine in his organization. He knows that he cannot afford to be wrong, so he keeps cost figures that are continually current. With such information at his fingertips he is able to nip uneconomical practices before they eat up his profits.

Today maintenance dollars are even harder to come by than contractor's profits. Any reasonable steps which can be taken to conserve them can be justified. Traditional railway accounting practices were designed to suit the needs of the ICC whose primary interest lies in the history of operations. Such figures do not lend themselves to preparation of the running data required for cost-accounting purposes.

Because of the new technologies in maintenance operations and the ever-mounting price of labor, full value of the maintenance dollar is becoming more and more dependent on up-to-the-minute records of actual field production and costs.

A few roads are setting up the necessary machinery for securing this information. More of them should be doing it.



Seven Million Pounds of Bridge on the Move as . . .

. . . The New Pushes Out the Old

● Using heavy jacks and double-drum hoists, the Pennsylvania was able to replace a giant approach section to its Monongahela River bridge at Pittsburgh, Pa., in only two hours.

The old section and its new replacement, having a combined weight of 3,500 tons, were jacked up and rolled laterally some 60 ft with the new section actually pushing the old one out of the way.

The replacement was made necessary by the construction of a final segment of Pittsburgh's Penn-Lincoln Parkway, running through the downtown section of that city. The parkway is to run along the bank of the river beneath the PRR bridge along an alinement formerly occupied by Baltimore & Ohio tracks. It was necessary to relocate the B&O tracks to a point farther back from the river where they would run under the approach section to the PRR bridge. However, relocation of tracks to that point was complicated by the fact that columns supporting the existing deck-plate girder bridge prevented running the tracks under it.

It was decided to replace the existing approach section with a new structure providing a combination of through and deck-plate-girder spans, with new concrete

pier supports relocated to permit passage of the tracks.

The new section, already fabricated, was delivered to the site and erected alongside the old section. Twelve special tracks were built running transversely beneath the approach section. Falsework on which to erect the new structure was built on platforms which in turn rested on steel rollers placed on the transverse tracks. In erecting the new section, space was made available for locating 64 Duff-Norton 50-ton and 75-100-ton jacks for use in lowering the structure onto its supports once it was in place.

After the new section was completed alongside and ready to roll in, the old segment was jacked up with 58 Duff-Norton ball-bearing screw jacks placed on platforms over rollers on the transverse tracks. With the section being supported by the jacks, the column supports were cut, thereby freeing the structure for movement. Two-inch cables from three double-drum hoists were then run under the old section and attached to the roller platforms on the new structure.

Here's How It Was Done . . .

1 NEW SECTION was erected on rolling falsework alongside existing structure. B&O tracks in foreground will be relocated to run under new spans. New highway is to occupy present alinement of tracks, making the relocation necessary.

Rolled Into Place

The two structures were then rolled along the transverse rails with the new section moving into place and, at the same time, pushing the old section out. The initial move was one foot, and the longest move in the operation was 4 ft. For making fractional lateral adjustments at specific points, jacks were placed horizontally against blocking on the tracks, rather than using the cable hoists.

When the new structure was situated properly over its concrete piers, it was raised so that falsework members could be removed, then was lowered into place on the piers. The railroad tracks were connected at both ends of the new approach section.

The project, carried out by Eichleay Corporation, Pittsburgh, cost $600,000. During the entire project, railroad traffic was interrupted for a total of only about 8 hr.

2 ON THE MOVE—New section was pulled in, the old pushed out, on transverse tracks using steel rollers.

3 HEAVY JACKS were used to raise structure so falsework could be removed; then it was lowered onto new piers.

Tie Cutting Stopped After . . .

TIE CUTTING is evident on low side of curve on No. 1 main track where standard plates have been in use.

NO CUTTING has been experienced on No. 2 main track where 16-in plates have been in service over a year.

. . . Applying 16-in Plates on Curves

• Outward cant of rails on curves, causing excessive tie-plate cutting, has been a serious problem on many roads. Among these is the Lackawanna which has experienced considerable difficulty with plate cutting on the low rails of curves of 2 deg or more along its heavy-traffic main line, particularly on heavy ascending grades.

To cope with this situation the road is replacing standard 13-in double-shoulder plates on the low sides of these curves with 16-in high-eccentricity plates. The installations are being made on 130, 131 and 132-lb rail along the double-track Hoboken-Buffalo line. This year a total of 46,186 of the new plates will be installed. The work is being done as part of a continuing program that was started in 1952. By the end of this year a total of 269,500 of the 16-in plates will be in service. Future plans call for application of at least 310,000 more.

The 16-in plate was developed by G. A. Phillips, chief engineer of the Lackawanna, in cooperation with the research staff at the AAR's Engineering Division, and has been adopted as recommended practice for use on curves by the AREA. It was designed especially for reducing plate cutting on curves where lateral forces cause rails to cant outward badly, requiring frequent re-adzing of ties and regaging. The plates can be used on either or both the high and low rails, depending upon individual conditions; however, the Lackawanna is having trouble with plate cutting only on the low rails. The road reports that

How They Look . . .

TOP of plate is displayed by roadmaster G. E. Harbaugh.

BOTTOM has 3/16-in deep ribs in diamond (waffle) pattern.

How They're Installed . . .

(1) SPIKES are removed by Nordberg spike-pulling machine.

(2) RAIL is lined to center of track after "breaking" joint.

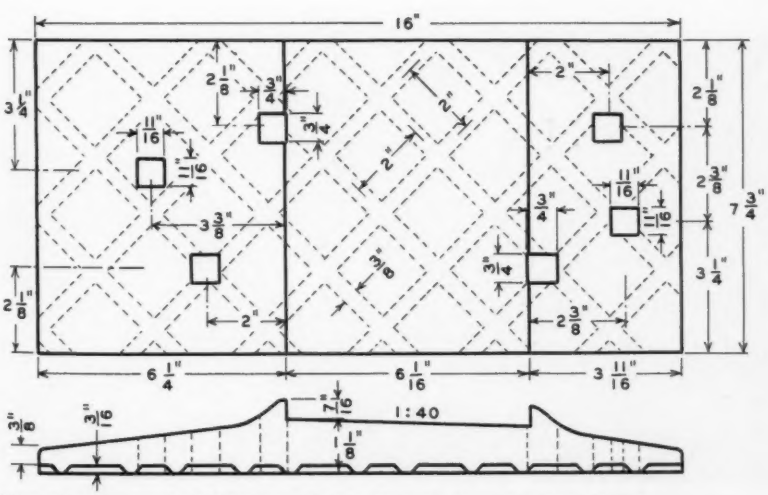
More on next page

Lackawanna is replacing standard 13-in double-shoulder tie plates on low rails of curves with 16-in high-eccentricity AREA plates. Plans call for applying the new plates on all curves of 2 deg and more along the road's double-track main line between Hoboken, N. J., and Buffalo, N. Y. This year a total of 46,186 plates will be installed on 41 curves laid with 130, 131 and 132-lb rail.

on curves where 16-in plates have been in service for over a year, there is no evidence whatever of plate cutting or wide gage. A recent inspection of one of these locations, where the large plates had been in service since early 1954, revealed that the ribs on the bottoms of the plates had not even penetrated the ties to any great extent.

The plates in use on the Lackawanna (see drawing) were manufactured by the Bethlehem Steel Company at its Lackawanna (N.Y.) mill. They are 7¾ in wide and are punched for one line spike and two hold-down spikes on each side of the rail. Maximum thickness is 1⅛ in and the surface cant is 1 in 40. The bottoms of the plates have 3/16 in deep ribs in a diamond or "waffle" pattern.

The 16-in plate is more than half again as heavy as its 13-in predecessor (31 lb as compared to 19 lb). Most of this added weight has gone into that portion of the tie plate outside of the rail. Of the additional 3-in length, 2¼ in were added outside the rail and ¾ in inside. The result is that the unit pressure exerted on the tie surface outside the rail is reduced considerably.



DL&W DESIGN for 16-in high-eccentricity plate is shown by these drawings.

Installing the Plates

The plates are being installed by 20-man gangs, each with two foremen. One of these gangs will apply the plates at the rate of about 700 per day. A variety of mechanized equipment is being used for the work, including a Nordberg spike puller, a Nordberg adzing machine, a Fairmont tie borer, a Fairmont tie sprayer, and a Nordberg spike hammer.

In changing out the plates on the low rail of a particular curve, the bars are removed from a joint at one end of the curve. While this is being done, spikes are pulled out-of-face as far around the curve as arrival time of the next train will permit. From that point on the spikes are pulled only "safe." As spikes are pulled a crew of men follows behind, lining the rail to the center of the track. Old plates are then removed and any high ballast in the tie cribs is "knocked down" with ballast forks.

Next, all spike holes are plugged, and the ties are machine adzed to accommodate the larger plate and remove any unevenness in the tie surface. Behind the power adzer

How They're Installed . . .

(3) SPIKE HOLES are plugged after removing old plates.

(4) TIES are machine adzed to accommodate larger plate.

(5) NEW PLATES are applied after surface is creosoted.

(6) HOLES are bored for both line and hold-down spikes.

the tie-spraying machine treats the adzed surface with creosote. The new plates are then placed and the rail lined back into position. As the rail is gaged into place, spike holes are bored with the tie-boring machine. To complete the job, two line and one hold-down spikes are driven into each tie by the power machine, and the joint bars are replaced on the end of the curve. Standard reinforced-throat cut spikes are used for both line and hold-down functions.

The work is being carried out under the direction of Mr. Phillips and under the general supervision of R. F. Bush, engineer maintenance of way, and J. A. Pollard, assistant to engineer of maintenance of way.

(7) SPIKING is done by machine driving one hold-down and two line spikes.

RAILWAY
TRACK and STRUCTURES

STAFF REPORT

For M/W Employees . . .

Mobile, Off-Track Housing

Survey shows that trailer-type living accommodations for floating crews are replacing conventional on-track bunk cars on many roads

These Questions Answered

- Why this sudden interest in the use of mobile, off-track housing for M/W employees?
- Just what advantages are there in the use of house trailers for accommodating M/W employees as compared with conventional bunk cars?
- What advantages, if any, are there in the availability of mobile, off-track housing during emergencies such as washouts or derailments?
- What precedent is there for the use of off-track, mobile housing units under such conditions as exist on the railroads?
- When and by whom were off-track trailers first used for housing railroad employees?
- Are basic changes taking place in M/W practices that are helping to stimulate the use of mobile, off-track housing?
- To what extent and for what types of personnel are mobile, off-track housing units now in use on the railroads?
- Are trailers available that are designed to meet the specific needs of railroad service?
- Is it important that trailers be purchased which incorporate high quality materials and workmanship?
- How is the transportation of mobile, off-track housing units handled?
- What governmental regulations must be observed in the use of mobile, off-track housing?
- Do employees who live in mobile, off-track housing units like them better than conventional bunk cars?
- Where work crews are trailerized, how are materials and supplies transported when the outfit is moved from one location to another?

"NEW LOOK" in employee housing and . .

. . . A CAMP of conventional bunk cars.

● A switch is taking place from on-track to off-track housing for maintenance of way and structures employees. It is true that this movement has just begun, but there are many who believe it will gain momentum as the roads acquire experience with mobile, off-track housing.

This experience to date is rather meager. There are some roads that have not had any at all. There is quite another group in which individual lines are just becoming interested and perhaps have purchased a number of trailers for experimental purposes. In still another group, admittedly small, off-track housing units are being acquired in accordance with definite programs. These programs may encompass either a portion or practically all of the floating forces.

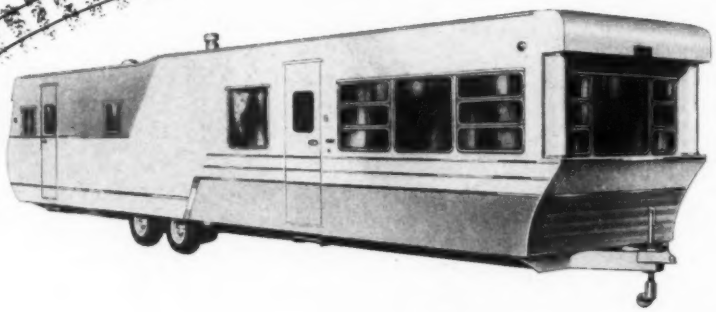
Whatever the experience of individual roads may be there is a need for more information about the use of trailers for housing M/W employees. That is why the report on these pages has been prepared. The information for it has been obtained largely through personal interviews with maintenance officers on roads using trailer housing, although much useful information has also been contributed by the manufacturers.

Much of this information is presented in the form of composite answers to the questions listed on this page.

In addition, to show how different roads are using trailers, three "case histories" are presented, each based on the practices of an individual line. These examples represent a cross-section of typical practice, and clearly indicate the possibilities inherent in this new form of housing.

are your needs small...

or large...



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The Trend to Trailers . . .

. . . and the why and how of it explained by questions and composite answers based largely on interviews with railway maintenance-of-way officers.

Q. Why this sudden interest in the use of mobile, off-track housing for M/W employees?

A. The answer to this question has its origin in the simple fact that much of the repair work done on tracks and structures must, of necessity, be performed by gangs that move from place to place. Traditionally, these gangs have been housed in so-called bunk or camp cars consisting largely of made-over box cars, coaches, baggage cars or sleepers.

Such equipment has been in use practically as long as the railroads have been in existence. The quality of the accommodations afforded by it vary over a wide range, but whatever else may be said in this respect about bunk cars it is only fair to state that they have provided the railroads with a practical means of housing floating work crews. The equipment could be spotted on a convenient side track, or one was built if necessary, and when the camp had to be shifted from one location to another the equipment could be transported over the rails in regular trains or in a special movement. As long as no alternative form of mobile housing was available, very little thought was given to the disadvantages of the track-bound equipment.

But times have now changed. The use of highway vehicles for transporting men, material and machines used by M/W forces has become commonplace. Use of the highways for this purpose has proved to have many advantages, and establishes a precedent for the use of housing units that may also be moved by highway.

While the trend toward the use of highway vehicles was occurring on the railroads, the public in general was exhibiting great interest in the so-called house trailer, a small, compact home on wheels which could be hooked behind the family car and transported at will. At first the house trailer was considered strictly a novelty item, something to be purchased by only well-to-do people for use primarily on vacation or outing trips.

It took the war, and its aftermath, to change all this. People such as construction workers whose occupations took them from place to place suddenly discovered that the house trailer offered welcome relief to the problems of family separation and housing they had long considered part of the job. With a house trailer they could take their families with them, even into remote, undeveloped areas. What's more, they could live in relative comfort and need no longer endure the drab accommodations afforded by rooming houses or temporary shelters.

What gave the development real significance was its rapid growth. Following the war, large numbers of people and families found it necessary to migrate from one place to another wherever their jobs took them. The house trailer provided an ideal answer to the housing problem. One or more trailer communities grew up in or around nearly every city of any size. More people began to buy trailers for vacation use, and it became popular for retired persons to acquire them for permanent living quarters, moving about with the changing seasons or for other reasons.

One estimate is that approximately 2 million persons now live in trailers. To meet the demand for mobile homes, nearly 200 companies are now in the business of manufacturing them.

House trailers have thus become an accepted mode of shelter for people who find it necessary or desirable to move about frequently. It is only natural, therefore, that the question should arise whether this form of housing has advantages for use by railroad M/W employees.

What Are Their Merits?

Q. Just what advantages are there in the use of house trailers for accommodating M/W employees, as compared with conventional bunk cars?

A. "If my company would give me authority to buy 100 house trailers, we could dump them in the river after two years—and still be ahead."

So spoke an engineering officer of a large road. What he meant was that the trailers would more than pay for themselves in two years through estimated savings in the cost of doing work. The savings, he said, would come about because the trailers could be spotted closer to work sites than the bunk cars now being used. Thus, travel time would be reduced and work time increased correspondingly.

This comment was made with bridge-repair gangs particularly in mind. However, the same principle applies more or less to practically

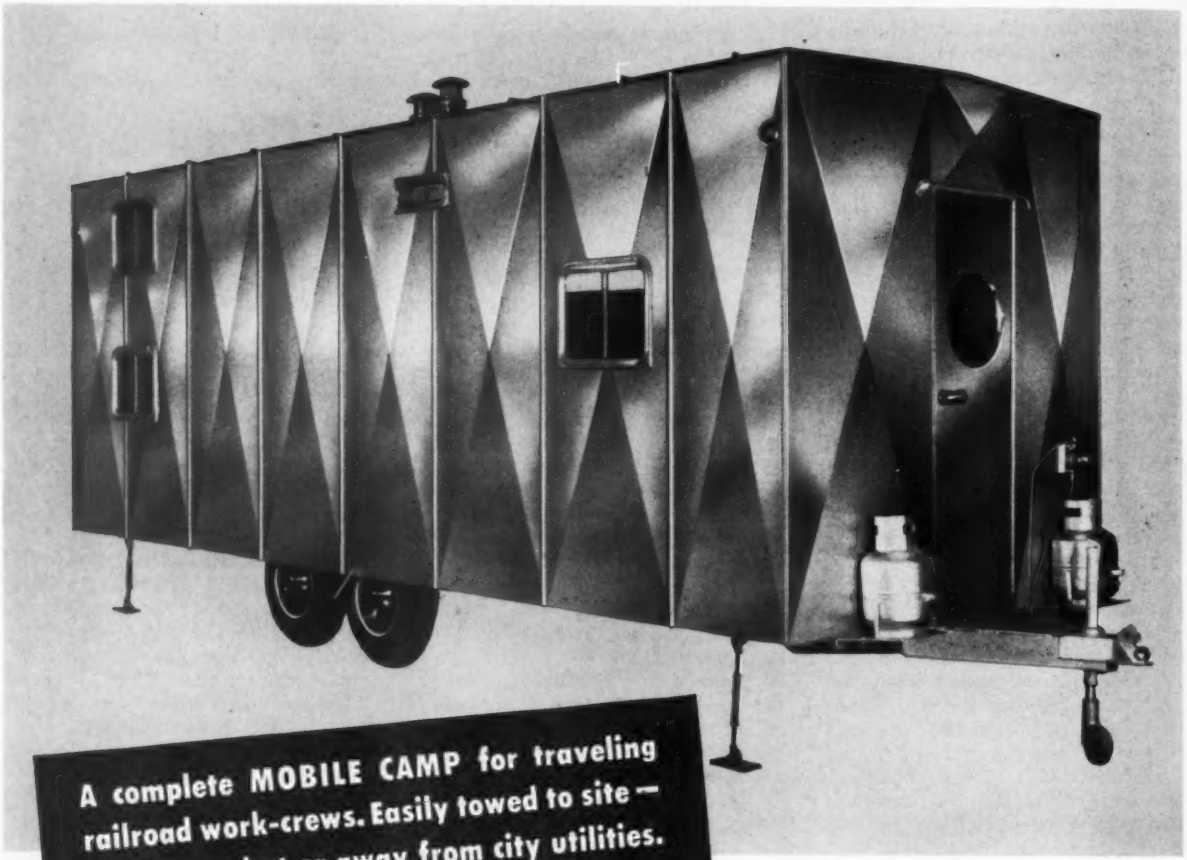
There Are Two General Types

When discussing the use of house trailers in railroad service it is convenient to classify them into two general types as follows:

***Self-Contained Trailers*—These have all the facilities generally associated with a complete modern home, the only difference being their relative compactness. Conventional trailers as manufactured for sale to the general public are of this type. The typical unit, as delivered by the manufacturer, contains a living room, kitchen and dining space, bath and toilet facilities and sleeping accommodations. There is a cook stove, a refrigerator, a sink, a space heater, a hot-water heater, and other appointments in the more expensive models. These trailers are available in overall lengths ranging from about 15 ft. to slightly more than 50 ft.**

***Special-Purpose Trailers*—In trailers of this type, each unit serves a specialized function such as cooking, dining or sleeping—or perhaps the cooking and dining functions may be combined in a single trailer. The kitchen trailer may have living quarters for the cook. Trailers of the special-purpose type come into the picture when the gang to be accommodated gets above a certain size, say 4 or 5 men. Combinations of special-purpose trailers can be worked out for housing gangs of any size that may be encountered in railroad service.**

MORRISON International CAMP CAR



A complete MOBILE CAMP for traveling railroad work-crews. Easily towed to site — can be used at or away from city utilities.

HERE'S WHAT MORRISON INTERNATIONAL CAMP CARS MEAN IN SAVINGS TO YOU. You can actually house 8 men for less than the usual hotel allowance for ONE. Save travel time and portal-to-portal pay by spotting crew and Camp Car at site of work.

COMBINATIONS OF UNITS WILL ACCOMMODATE ANY SIZE CREW. Self-containment features make it possible for two to fifty or more men to live entirely independent of utilities and servicing for a week to ten days.

BUILT BY RAILROAD MEN TO SERVE RAILROAD NEEDS. Engineered and constructed to withstand rough off-the-highway travel, easily towed to site by any type of mobile equipment. All utilities provided with safety devices. Entrance and exit at each end of car. Entire unit insulated to withstand extreme hot or cold outside temperatures.

MORRISON INTERNATIONAL CAMP CARS ARE ALREADY IN SERVICE ON SIX LEADING TRUNK LINE RAILROADS!

AVAILABLE IN THESE STANDARD MODELS

- **2 to 5 Man, Complete Living Facilities**
- **8 Man Dormitory with Complete Sanitary Facilities and Shower**
- **8 Man Combination Kitchen, Dining and Recreation Car**
- **Complete Kitchen Car with Living for 2**
- **Dining and Recreation Car, Accommodates up to 22**
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every other type of floating gang used on the railroads.

The man making the statement was basing his evaluation of trailers solely on the one factor—reduced travel time. He did not consider it necessary in this particular case to take into consideration any of the other factors having a bearing on the use of house trailers. The fact is there are other important considerations. One of these has to do with the cost, delays and other difficulties in transporting conventional bunk cars. An engineering officer of a large railroad making extensive use of trailers puts it this way:

"Like other railroads we make it a practice to transport bunk cars in regular trains. As we went more and more to diesel power, our freight trains became longer and fewer. Of course the fact that we were running fewer freight trains made it more difficult to move bunk cars when we wanted to. But that wasn't the principal trouble. Some of the older bunk cars were not too well maintained and when these were switched in at the head end of a long freight it was not uncommon for a drawbar to be pulled. When this happened, movement of both the bunk cars and the train itself was delayed. Another difficulty is that much of our switching is done at modern hump yards, and it is not practical to hump bunk cars, thus imposing complications in handling them at terminals."

In contrast, off-track mobile housing units can be moved from one location to another irrespective of train movements. When a gang has finished its work, or while it is still working for that matter, its trailers can be put on the road without delay.

And, as indicated at the outset of this answer, they can be spotted at any convenient and suitable location close to the work site, independent of the availability of side tracks. This advantage ranks high in importance in the minds of engineering officers interviewed in this survey. There are few restrictions to be considered in choosing a site for trailers. When provided with a portable generator for furnishing electric power, trailers become completely self-sustaining, except for a water supply. But even the need for a water supply does not impose too much of a restriction as water can be hauled several miles if necessary in the interest of keeping the trailers close to the place where the gang is working.

The prevailing practice where trailers of the self-contained type are used is to spot them at locations on railroad property where a plug-in source of power is available. At such locations it is more than likely that a source of water

What Are the Dollar Savings?

The basic reason for substituting mobile off-track housing for on-track camp cars is to save money. The big question is, how much do they save? And that's not easy to answer.

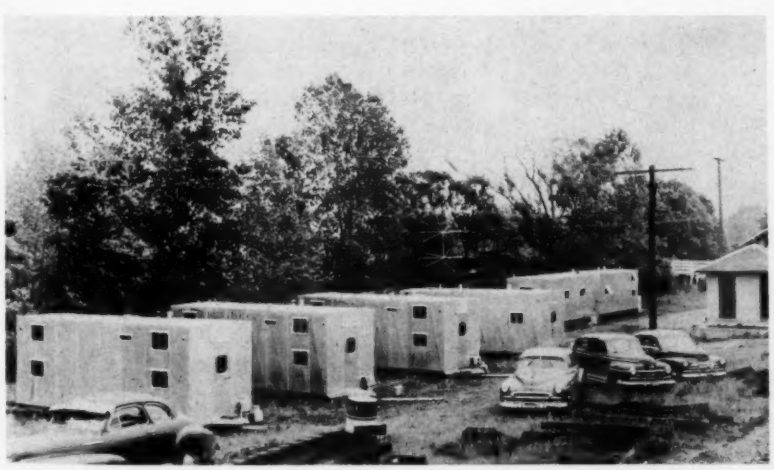
A top engineering officer on a road making extensive use of trailers stated he had received many requests from other lines for information on the amount of money being saved. Although he is convinced the economies are large he says that a precise answer to the question can't be made. This is because the savings are largely of an intangible nature. For instance, it would be pretty hard to figure how much it actually costs to move camp cars over the rails as compared with transportation of trailers over the highways. The same applies to other types of savings such as those resulting from reduced travel time due to the fact that trailers can generally be parked closer to the job.

At least one road, however, has made an attempt to estimate the savings and has come up with some interesting figures. One set of these is based on the results with an eight-man gang, and another set gives the results for a four-man crew. In its estimates this road has concerned itself only with the expenses incurred when the movement of camp cars is delayed. In emergencies, when gangs are moved on short notice, the road is obligated to pay for the meals and lodging for the men while they are at the new location waiting for the camp cars to arrive. There is also a loss of productive time when a delay occurs in the movement of the camp after a regular job has been completed.

When trailers are substituted as housing for an eight-man crew this road estimates that the savings in meals and lodging in emergencies while the gang is waiting for its camp equipment amounts to $700 yearly. For a four-man gang this saving is estimated to be $120 annually.

For an eight-man gang the loss of productive time in carrying out programmed maintenance while the men are waiting to be moved is estimated to be 26 days a year. This is equivalent to $3,120, which is the saving when trailers are used. The equivalent saving for a four-man gang is 40 days annually, or $1,200. Thus, the total estimated saving on these two counts for an eight-man gang is $3,820 per year, and that for a four-man crew is $1,320.

It is important to repeat that these economies are exclusive of any other savings, such as those that would be realized by having men closer to the job.



TRAILER CAMP on DT&I has three eight-man dormitory units, an office and storage unit, also for foreman, and kitchen and dining trailers. These are Morrison trailers.

DORMITORY trailer of type used in camp at left looks like this inside.

is also available. Several roads that have equipped these forces with off-track mobile housing are providing water and electric outlets, and sometimes sewer connections, at strategic locations. Lengths of electric cord and ordinary water hose, carried as part of the trailer equipment, will provide the necessary connections.

However, the flexibility of spotting trailers may be enhanced considerably by providing them with gasoline-powered generating sets. This problem is, of course, solved automatically if the gang is assigned a portable generator as part of its regular equipment, which is frequently the case with bridge and building crews. Another possibility is to furnish the trailers with oil-burning lamps of one kind or another for use at locations where electric power is not available.

What About Emergencies?

Q. What advantages, if any, are there in the availability of mobile, off-track housing during emergencies such as washouts or derailments?

A. Because of the limited experience of most roads with trailers to date, any discussion of this question must be based largely on conjecture. But logic points unmistakeably in the direction of important advantages in the use of off-track housing.

Comments about this phase of the subject were made by a top maintenance officer of a road that is experimenting rather extensively with this type of housing. At the time of the conversation, his road had experienced some serious difficulties with high water, and for this reason he was in a position to speculate with some authority on the advantages of having house trailers available under such circumstances. His opinion was that the use of off-track housing would make it possible to establish repair gangs much closer to the site of the trouble than would be the case if bunk cars were the only mobile housing available. Then too, he visualized the possibility of kitchen trailers being of particular advantage, making it possible to feed the men right on the spot.

In cases where a line has been washed out at several locations, it is apparent that the availability of mobile off-track housing would be of particular advantage, because bunk cars cannot be brought closer to the work than the first washout encountered. It might be pointed out that highways are also apt to be washed out; even so, it would not be too much to expect that alternative routes could be established in most cases.

Plenty of Precedent

Q. What precedent is there for the use of off-track, mobile housing units under such conditions as exist on the railroads?

A. There is ample precedent for such use. Contractors in general have been making increasing use of trailers for housing their field forces and offices. Contractors specializing in the construction and maintenance of railroad trackage comprise an example of trailer use that comes very close to simulating conditions found on the railroads. One contractor in this field started using trailers for housing his men nearly 10 years ago. Only a few weeks ago a railroad contractor bought 30 trailers for this purpose.

Q. When and by whom were off-track trailers first used for housing railroad employees?

A. A precise answer to this question cannot be given. On the basis of available evidence it seems fairly certain that the first trailers used by M/W employees were purchased by the men themselves, so that, when away from headquarters, they could have their wives with them under home-like conditions.

Almost simultaneously with this development, the railroads began to show interest in acquiring trailers for the use of their employees, and as a substitute for bunk cars.

Changes Set the Stage

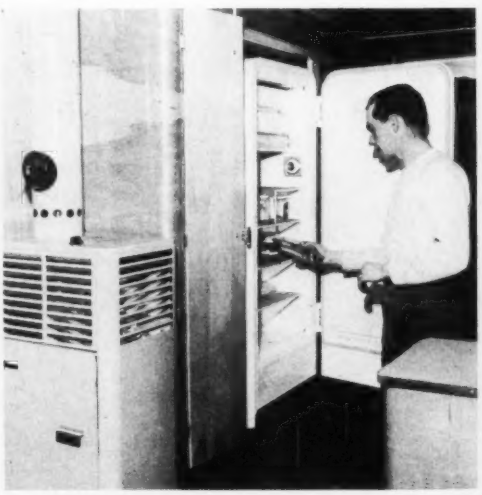
Q. Are basic changes taking place in M/W practices that are helping to stimulate the use of mobile, off-track housing?

A. There is no doubt about it. The effect of the trend to highway vehicles for hauling men, materials and equipment has already been mentioned. What this means is that railroads generally do not need to invest in hauling units when acquiring mobile, off-track units; they are already available and need only be equipped with the necessary hitches for coupling trailers to them.

But this is not the only reason why the "climate" is right for the

(*Continued on page* 52)

HOME-LIKE atmosphere characterizes self-contained trailers. Here a two-man welding crew on Erie is shown "at home" in their trailer.



REFRIGERATORS are standard equipment in all units of this type. This is an Indian trailer.

Travelling welding gangs making repairs on Erie track are now housed in modern Indian Trailer units.

Each trailer accommodates two men, is equipped with bottled-gas cook stove, electric refrigerator, hot water heater, toilet, shower, and oil space heater.

Two-man Erie "megger" crews also are each housed in an Indian Trailer unit.

The ERIE keeps 'em living near the job in mobile Indian Trailer units

TRAVELLING Erie work crews quartered in modern house trailers instead of old-fashioned camp cars have gained flexibility and efficiency and overall economy for both emergency and scheduled track-work. The "Indian Warrior" 31-foot tandem-axle units which they use for this off-track housing are transported by company vehicles and are parked at stations adjacent to jobs, or wherever nearest water and electricity are available.

WE invite you to investigate the suitability of Indian Trailer Mobile Homes for your work crew needs.

STANDARD Indian Trailer 29-foot "Scout" or "Brave" units, similar to those used by the Erie, are pictured below. Left: from living area looking through kitchen to bedroom. Bathroom is between bedroom and kitchen. Space heater in foreground may be either gas- or oil-burning. Electric refrigerator and storage cupboard are back of space heater. Center: opposite end of living area. Davenport will make up into double bed. Right: electric generator, mounted below sink, is available when self-contained unit is desired.

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These standard Indian Trailers will house two men individually; in emergencies, four comfortably.

NEWS

MON-O-COACH trailers meet your ex off-track housing of maintenance fo

HERE you have a new and exceptionally good solution to a present or future problem — *mobile* housing of maintenance-of-way forces.

Up to now, the general practice has been to use converted railroad cars for such housing. Occasionally converted house trailers have been used.

Now Mon-O-Coach makes available its all-aluminum trailer in *exclusive* monocoque construction. It is designed specifically for off-track housing and already proven preferable for this purpose in actual use. In addition to considerable cost savings, there are many important advantages to using all-aluminum off-track trailers as designed and built by Mon-O-Coach, Inc.

Maneuverability Gained. The type of trailer offered by Mon-O-Coach is perfect for maneuverability. It can b One moved easily — by car, light truck or jeep. It conforms to hig -way way travel requirements. It can be parked in relatively small are nonon It may be located for short or long periods, as needs requir Ho

Obviously, trailers require no track equipment or extra si ach ings. These costs are entirely eliminated. Nor do trailers requi nan, long, costly hauls from on-track housing to work sites, whe u ca sidings are not nearby. mple

The use of trailers for bridge-and-building forces, carpente y be welders, and the like are natural. For example, it has been fou ns — that a welding crew can be furnished with a trailer, a truck an Mon all equipment required for far less than the cost of converting its, a car for only housing this crew. just

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y. It can b... One leading railroad has also found that most all maintenance-
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extra ti...ach off-track trailers are currently built in six models—6-man,
lers requi...man, 2-man, foreman and 2-man, dining and kitchen trailers.
ites, wh...u can combine these — and possibly others — into whatever
...mplements serve your specific purposes. Interior arrangements
carpente...y be as presently designed, or altered to suit your specifica-
been fou...ns — without high conversion costs.
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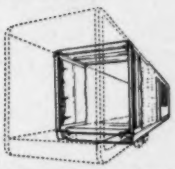
onverting...ts, and Mon-O-Coach's specialized engineering assistance may
...just what you've been waiting for. Investigate now.

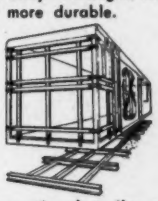
Monocoque construction for 'lifetime' durability in all-aluminum Mon-O-Coach trailers

PERHAPS the biggest reason *Mon-O-Coach* off-track mobile housing units have captured the interest of railroads is their exclusive, exceptionally durable, *all-aluminum* monocoque type of construction.

Monocoque construction produces a unit that is completely integrated — with all structural members, including the side and top panels, bearing the load, pull and shock stresses. This differs substantially from the conventional "box-on-chassis" type of construction — with weakness bound to develop where bolts and nails are used to hold the body to the chassis.



Monocoque construction produces an integrated, one-unit body — stronger, safer, far more durable.



Conventional trailer construction is essentially a box-on-chassis.

Withstands Rugged Service

In the Mon-O-Coach, stresses, jolts and jars are dispersed throughout the entire body and side panels. No one point takes the brunt of these stresses. There's no "shock line" that eventually weakens to the point of trailer uselessness.

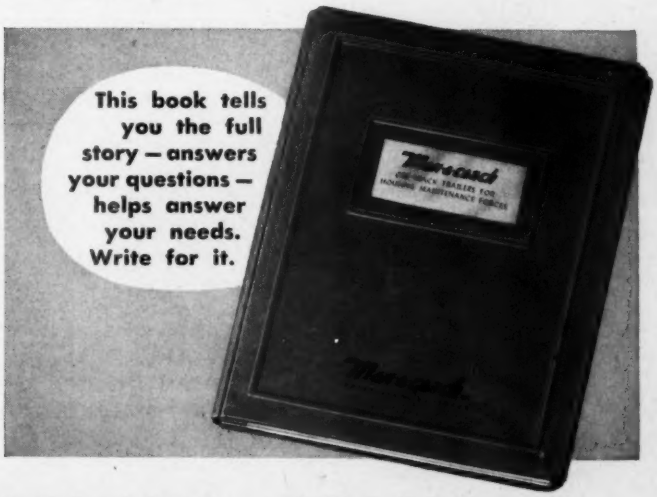
Severe tests of monocoque construction prove its exceptional durability. It is estimated that a monocoque-design trailer will outlast a conventional trailer by at least four times.

Exclusively Mon-O-Coach

Only Mon-O-Coach offers this monocoque-built trailer. Design extrusions are made from dies developed and owned by Mon-O-Coach, Inc. And only Mon-O-Coach has the experience and facilities to build this proved, more durable trailer.

Being all aluminum, the exterior requires very little maintenance. The Mon-O-Coach also resists rust and corrosion. The aluminum interior is also easy to keep clean.

The complete facts about Mon-O-Coach off-track trailers are available to you without obligation. Simply write, on your letterhead, for 48-page book, "Off-Track Trailers for Housing Maintenance Forces."



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use of such housing. The current trend towards the lengthening of sections or abolishing them altogether, and the creation of floating specialized gangs of various types, is an important consideration. To an increasing extent, the railroads are creating small track-welding and repair outfits for which mobile, off-track housing is regarded as ideally adapted. Also, there are more small bridge and building repair outfits, as well as an increasing number of special-equipment operators for whom the use of this type of housing has advantages.

Another factor, as mentioned by one chief engineer, is the situation created by the retirement of sidings. On his road, such retirements had taken place to an extent that difficulty was being experienced in finding places to park bunk cars within a reasonable distance of where work is to be done.

Status of Trailers Now

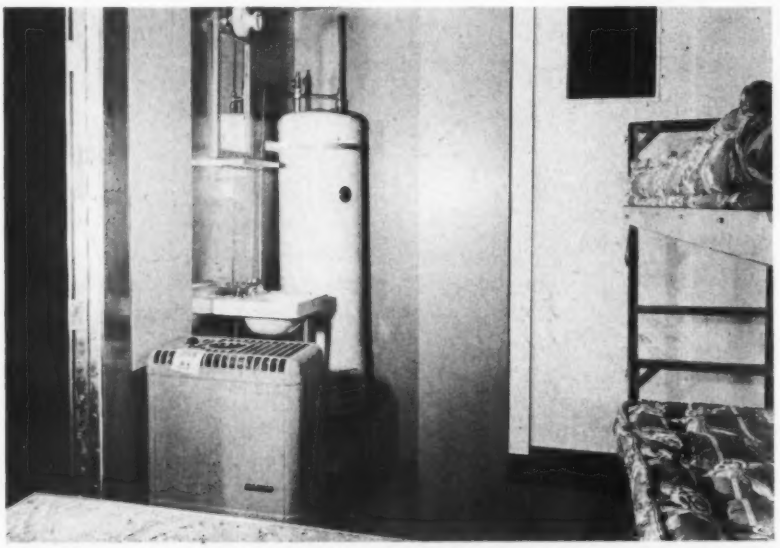
Q. To what extent and for what types of personnel are mobile, off-track housing units now in use on the railroads?

A. At least a dozen large railroads, and probably more, are now using trailers, either experimentally or as a regular practice. When the movement first started, it was confined for the most part to trailers of the self-contained type, such as those produced by manufacturers for the regular trade. Designed to provide for the living needs of families of two, three or four people, such trailers could be adapted without change for housing small gangs. A two-man welding outfit, consisting of a welder and helper, comprises an ideal situation for the use of house trailers, and it is likely that such outfits provide the most common application of house trailers on the railroads today.

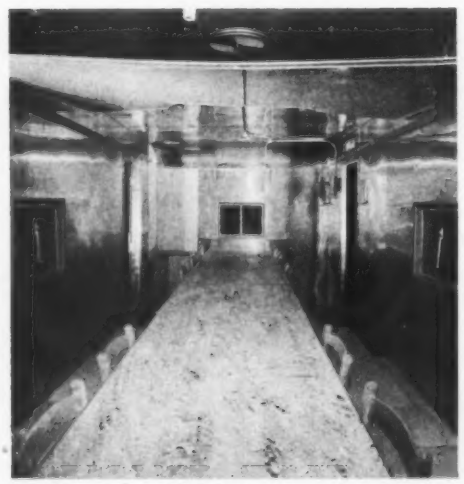
Other classes of workers now being accommodated in self-contained house trailers include operators of special equipment such as cranes, shovels and bulldozers; small gangs of two or more men making light repairs to bridges and buildings; and two-man electrical testing gangs, more commonly known as megger gangs.

Coming along a little bit later was the development and use of special-purpose trailers for larger gangs. Use of trailers of this type is based on the thinking that, when providing mobile off-track housing for six, eight or more men, it becomes more practical and economical to furnish trailers having specialized functions. For one thing to incorporate complete living facilities for these larger gangs in a single unit would obviously require a vehicle of excessive size. Special-purpose trailers may consist of kitchen trailers, bunk or dormitory trailers, dining and recreation units, or still others combining several of these functions. This way, by grouping the trailers as necessary, the needs of gangs of different sizes can be met.

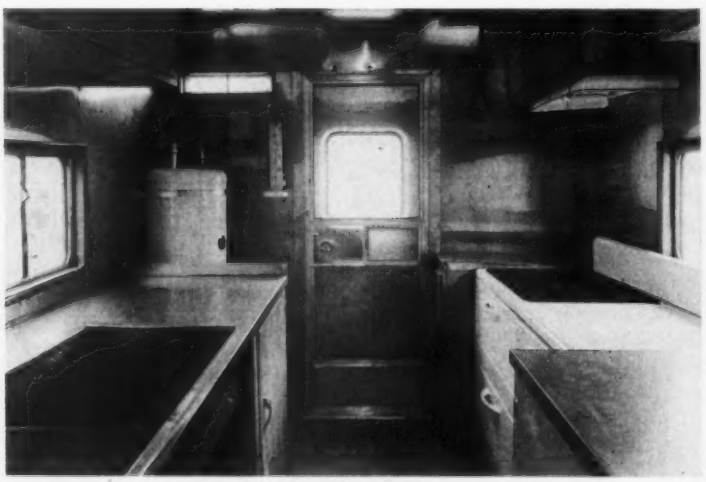
Increasing interest is being shown by various railroads in the use of



FOREMAN's portion of special-purpose trailer which also has living quarters for two men at other end. Pictures on this page show Mon-o-Coach trailers.



DINING trailer has capacity for seating about 16 men. Table has drop-leaf sections at ends.



FACILITIES in kitchen unit include stove, ice box, sink, work table, cabinets, canopy and hot-water heater. Cook's quarters are at other end.

these special-purpose trailers. One large railroad has embarked on a program to replace all of its conventional bunk cars with mobile, off-track housing, consisting to a large extent of special-purpose units but also including trailers of the self-contained type.

Other roads are adopting a more deliberate approach to the use of trailers of both types. A limited number of units is acquired and placed in service with the idea of evaluating their qualities and attributes over a period of time. Several railroads that have done this have placed repeat orders.

More than likely the practice is to scatter these experimental units over the road, placing one here and another there. One manufacturer takes issue with this practice, pointing out that, for comparative purposes, a more effective practice is to trailerize an entire territory more or less completely. Only in this way, he says, is it possible to develop comparative figures on cost and performance. There seems to be considerable logic in this suggestion.

Trailers for Any Need

Q. Are trailers available that are designed to meet the specific needs of railroad service?

A. Several manufacturers have become interested in this market and are offering special-purpose trailers to meet railroad needs. One manufacturer, for example, offers six models—a kitchen trailer, a dining trailer, a unit for housing a foreman and two men, a six-man bunk trailer, a four-man self-contained trailer, and a two-man self-contained unit. The latter two models have cooking facilities as well as living and sleeping quarters.

Another manufacturer is also offering six models, but on a somewhat different basis. His units consist of a two to five-man self-contained trailer, an eight-man dormitory, a kitchen unit, a combination dining and recreation trailer, a combination kitchen and dining unit, and an office and two-man bunk trailer with space for equipment storage at one end.

Q. Is it important that trailers be purchased which incorporate high quality materials and workmanship?

A. It is essential that trailers destined for railroad service be strongly and substantially built for durability and long service. It is especially important, according to one manufacturer, that trailers bought for experimental use have these qualifications. A railroad experiencing difficulty with such trailers is apt to get discouraged and fail to follow through with the experiment, thereby depriving itself of such inherent advantages as house trailers may have.

Moving Them No Problem

Q. How is the transportation of mobile, off-track housing units handled?

A. In the case of small outfits equipped with one or two trailers this is a simple matter. In practically all cases these outfits already have a truck for getting the men and their equipment to and from work. When the gang is ready to shift its operation from one location to another it is a matter of but a few minutes to attach the trailer to the truck and to get underway.

Where the outfit may consist of a group of trailers, the problem is not quite so simple, but still not difficult. On one road that makes extensive use of this type of mobile housing, all trucks assigned to the maintenance of way department have been equipped with hitches so that they may be used for hauling trailers if necessary.

It then becomes possible to assign several trucks to move a trailer outfit. The trailers may be moved during the day while the gang is working, or over a weekend. One or more laborers are assigned this task. If the move is made during a weekday it is not uncommon for the kitchen trailer to be spotted close to the work site at noon so that the men may be served a hot lunch. If the move is made over a weekend, it becomes necessary, of course, to pay overtime to men assigned to this work.

There Are Laws to Watch

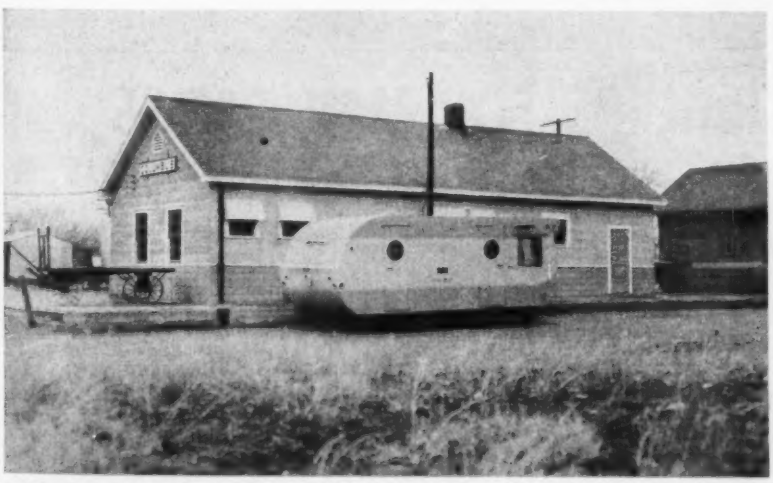
Q. What governmental regulations must be observed in the use of mobile, off-track housing?

A. With a few exceptions, the states are the principal governmental bodies which regulate the use of house trailers. Laws of the various states differ considerably; however, there are several general areas of regulation that the prospective trailer user should investigate. Some of these are:

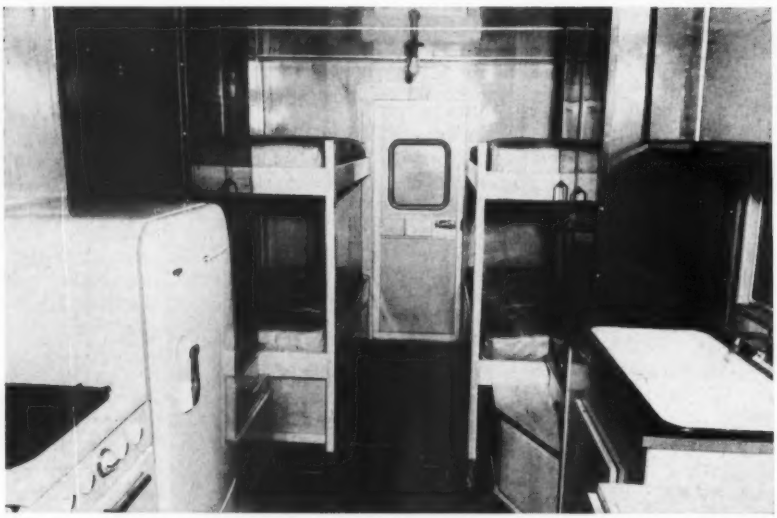
(1) Practically all states place limits on the lengths of trailers and the overall lengths of trailers and towing units. Most states will issue an over-length permit for travel over highways. However, a permit must be obtained for each individual move of the over-length vehicle. Most railroads prefer a trailer unit of such length that practically any kind of vehicle can be used to tow the trailer without exceeding the permissible overall length of the combination in the states where they operate. In this way flexibility is obtained in the use of towing vehicles without having to go through the red tape of obtaining a permit each time a trailer is moved over the highways.

(2) Several states specifically prohibit persons riding in trailers while in transit. In any event, riding in moving trailers is not recommended strictly in the interest of safety.

(3) Most state laws require "adequate braking systems" on trailers.



TRAILERS can be spotted at stations for water and electrical connections. This Richardson trailer is occupied by a Frisco two-man welding gang.



SPECIAL trailers with complete facilities for housing four men are available. This view shows interior of unit made by International Trailer Company.

This is not too significant, though, since all trailers come from the manufacturers with either electric or hydraulic brakes as standard equipment.

(4) Clearance and running light requirements vary somewhat from state to state. However, as units come from the manufacturer, lighting is generally adequate for operation in most states.

(5) Directional signal indicators are a requirement in some states.

(6) Safety chains between a trailer and its towing unit are required in certain areas.

(7) Licensing of trailers and the period for which the license is effective varies from state to state. Where trailers are operated interstate, most states will give the licensee a 30-day grace period in which to operate with an out-of-state license plate.

(8) Taxing of trailer housing also varies widely from state to state. Some tax the units as real estate, some on the basis of so much per square foot and still others as personal property. In some localities, city and county taxes also have to be investigated.

(9) Liability insurance requirements also differ somewhat among the states. In general, where the motor vehicle code covers liability of cars and trucks, it also applies to trailers. Some states have separate liability regulations governing the mobile units. In any event, it is recommended practice to cover all trailer units with adequate liability insurance.

How Do They Like Them?

Q. Do employees who live in mobile, off-track housing units like them better than conventional bunk cars?

A. Maintenance officers on railroads using trailers are generally satisfied that employees consider them more acceptable as living quarters than bunk cars. Various factors are involved here. One of these is the nature and quality of the accommodations themselves, and the manner in which they are kept up and maintained. Other things being equal, there can hardly be any question but that house trailers, especially those of the self-contained type, can be made more comfortable and home-like than bunk cars. A chief engineer of one road that is making extensive use of trailers is convinced that very few of the men housed in them would prefer to go back to bunk cars.

On one railroad that feels there are advantages in assigning house trailers to welding outfits and special-equipment operators, the practice is to get an expression of opinion from the employee before he is asked to live in a trailer. To date, only one employee has rejected the opportunity. One welder, commenting by letter on the use of trailers, stated he thought it was a "very good and sound idea," and that the use of trailers should have advantages for all concerned.

Another clue to the acceptability of life in trailers is provided by surveys made by various agencies to determine the reaction of private owners of mobile homes. One such survey developed the fact that fully 95 per cent of trailer families consider that "trailer-life is a very satisfactory, pleasant, and enjoyable mode of existence." In another survey 17 out of 20 purchasers queried said they would not leave their mobile homes *even if offered a house or apartment at what they consider a reasonable price.*

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Mr. Clarence Gush, St. Louis, Missouri
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Railroads are finding that it pays to give their M/W and bridge and building workers—"a home away from home" on jobs where it is inconvenient or impossible to get back to the home base.

Modern, custom-built trailers are ideal for this purpose. INTERNATIONAL has a complete line of kitchen-diner, bunk and office trailers—all built to a basic design which can be varied to suit individual needs. These sturdy, comfortable trailers are fabricated with aluminum sidewalls and are fibre glass insulated throughout. *Write for typical plans and complete information.*

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Q. Where work crews are trailerized, how are materials and supplies transported when the outfit is moved from one location to another?

A. With most types of the smaller gangs, the trucks regularly assigned to the crews, and which are used to haul the trailers, are generally sufficient to carry all necessary supplies, equipment and tools.

However, some of these smaller outfits, and many of the larger ones, carry with them quantities of supplies and equipment that sometimes cannot be conveniently transported in trucks. In such cases it is not uncommon for the gangs to continue the use of tool and material cars for this purpose. With outfits having heavy equipment to transport, such as bulldozers and other types of grading machines, it becomes more or less necessary to retain use of tool and material cars for transportation purposes.

It should be noted here, however, that the trend is in the direction of making gangs more or less completely independent of rail transportation when moving to new work locations. Highway trailers are available, or are being developed, for transporting even the larger units of work equipment. Thus, it is not difficult to visualize entire outfits, equipment and all, moving over the highways.

How They're Being Used

Practices in the use of mobile off-track housing units by different roads follow no set pattern. Some roads have both self-contained and special-purpose types; others are using only self-contained units. In other respects, too, there are variations in practice. That is why it is worth while to find out what the different roads are doing. A cross-section of practice is given by the following typical examples.

Example No. 1 . . .

- **Crews of two to eight men**
- **Both special-purpose and self-contained trailers**

Annual savings of $3,000 per year per housing unit are estimated by one large railroad following replacement of conventional rail-bunk cars with house trailers.

This road currently has a total of 13 trailers in service and plans eventually to replace all of its bunk cars with house trailers, possibly supplementing them with other types of portable housing in a few special cases. The road is using both self-contained and special-purpose trailers. The first type is being furnished for small maintenance gangs not exceeding five men. The other type is being furnished to larger gangs of eight or more men. Two of the special-purpose trailers are combined for use with each gang; one is outfitted to provide sleeping, shower and toilet and recreation facilities; the other is a combination kitchen-dining unit.

Trailers Increase Flexibility

One of the principal advantages maintenance officers of this road could foresee in switching to off-track housing is the increased flexibility of movement which it provides. In recent years the road's local freight service has been curtailed sharply in the face of declining revenues. Furthermore, the advent of dieselization has brought on longer and fewer trains. The result of both of these factors is that train service cannot be depended upon for moving rail-bunk cars quickly and at the proper time.

The road found that this inflexibility of movement of bunk-car housing is highly detrimental to a program of maintenance work. Where work is laid out in advance for track maintenance and B&B crews, it is necessary that moves from one location to another be made with a minimum of delay. If serious delays do occur, then the gang is set back by just that much in carrying out its schedule of work. With off-track housing the gangs so equipped are given a freedom of movement which permits them to progress according to their programmed schedules.

Another advantage of trailer housing is emphasized during emergencies such as derailments, washouts, etc. Gangs can move to the scene of an emergency on very short notice, carrying with them their living quarters. It has been pointed out that in many cases the house trailers can be moved much nearer the work site than is possible with bunk cars. Furthermore, trailers assembled at the scene of an emergency can be grouped together to form a camp where all workers on the job can be fed. Where the work is such as to involve round-the-clock operations the men can take turns using the sleeping, shower and other facilities.

Units for 2 to 5-Man Gangs

The small-gang trailers are being furnished to light bridge-repair gangs, comprising from two to four or five men; paint gangs; division welding gangs; some special-equipment operators; and other miscellaneous floating type crews on each division. Seven trailers of this type are now in service, and the road anticipated eventually having an average of about two of these units per division. This would mean a total of about 35 trailers of this type.

All seven of the trailers now in service are being used by the light bridge-repair crews. These outfits move from station to station along the line making minor repairs to stations, bridges and other structures. By employing these light-repair crews for such work, the road is able to relieve its larger bridge gangs for carrying out the heavy maintenance program.

Each of the small bridge gangs originally had a bunk car, a tool car, a light motor car and a push car. Later on, a ½-ton or ¾-ton pick-up truck was provided. As each of these gangs is being furnished with a house trailer its bunk car is eliminated, but the other rail-mounted equipment is being retained. As the crew moves along from station to station performing its light-repair tasks, the tool car is moved from siding to siding as necessary. However, with the truck the crews are able to carry along with them tools and materials necessary for several days work, using the tool car primarily as a storage unit. In cases of emergency, all the tools and supplies necessary for making temporary repairs can usually be carried in the truck.

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For mobile camps of semi-permanent nature, the Onan "CW" model shown above has many advantages. It is available in either 5,000 or 10,000-watt capacities, fully housed for weather protection, and can be mounted on 2-wheel dolly, 4-wheel dolly or skid. Smaller models for one or more trailers are available either housed for outdoor installation or unhoused for mounting within truck or trailer.

Onan Electric Plants are in use today by many railroads for electrifying off-track housing as well as shop trailers and tool cars. And for years, Onan has supplied electric plants to manufacturers who install them as factory equipment in trailers for home or business use . . . your assurance of proved performance.

PORTABLE AND MOBILE MODELS — *500 to 10,000 watts*

Single-cylinder—500, 750, 1,000 and 2,500 watts A.C.
Two-cylinder—1,500, 3,500, 5,000 and 10,000 watts A.C.
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The trailers are generally parked near station buildings where electricity and water connections are available. However, each unit has a water storage tank and a supply of Coleman lanterns which can be utilized when it is necessary to set up the trailer at a remote location. Portable generating plants, used by the crews for powering hand tools, can also be employed to furnish lighting for the trailers.

Camps for Larger Gangs

For larger-gang service this road recently purchased three two-trailer combinations. Two of the combinations have been assigned to bridge gangs, the other to a track-maintenance gang. The two-trailer camps accommodate seven men and a foreman, providing living quarters in one of the units and kitchen-dining facilities in the other.

These gangs are furnished with a 1½-ton truck which is used for transporting the men and carrying supplies, as well as for moving the trailers from one location to another. When carrying out programmed maintenance work, the camps are moved from station to station along the line, usually not over 10 miles at a time. However, moves of 50 miles and up to 100 miles are not uncommon. In an emergency the units could even be moved several hundred miles.

The normal procedure for moving the camp from one point to another is to make the move in two trips.

On the first trip the truck pulls one of the trailers to the new location, uncouples and goes back to tow the other unit to the new site. For longer moves and in emergencies other trucks are available for use in moving the extra trailer so that the regular gang truck does not have to make a double trip.

The six larger-gang trailers were purchased by this road for testing to see just how well such a set-up works. Officers report that they are very well pleased with the 8-man outfits and that they are satisfied that the use of such off-track mobile camps offers a satisfactory solution to the problem of housing larger maintenance gangs, as well as smaller crews. This road anticipates purchasing quite a number of additional special-purpose units in the future for assignment in combination to other B&B and track-maintenance crews of eight or more men.

Example No. 2 . . .

- **Two-man welding crews; Special-equipment operators**
- **Self-contained trailers**

This road now owns 12 trailers. Of these, nine are assigned to two-man welding (track-repair) gangs and three are used by special-equipment operators. One of these is the operator of a production-type tie tamper. Another of the special-equipment operators works with a Caterpillar D7 tractor-bulldozer, and the third with a Ford wheel-type tractor which is provided with various attachments including a weed mower, a posthole digger and a backhoe.

This road has 27 of the two-man track-repair gangs. Some of these working in or around terminals tie up at their regular headquarters each night. But others are of the floating type which move from station to station along their assigned territories as the work demands. Each gang is equipped with a ¾-ton pick-up truck and a complete complement of welding equipment and other power tools for doing a variety of repair work.

All of the floating gangs were formerly housed in bunk cars, and each of them is equipped with a specially fitted box car in which is kept tools and supplies.

Several years ago the road started the practice of replacing the bunk cars with self-contained house trailers. In other words, when a bunk car gets to a point where it is considered obsolete or in need of extensive repairs, it is considered more economical, considering all factors, to replace it with a house trailer.

The trailers used are all of the same type and size, having a body length of 19 ft and an overall length of 21 ft. They each have a bottled-gas cooking stove, an electric refrigerator, a hot-water heater, toilet and shower facilities, and an oil-burning space heater.

The usual practice is to park the trailers at passenger depots where water and electricity are available. For this purpose each trailer carries a length of electric cord and about 100 ft of garden hose. However, if it should be more convenient to do so, employees using a trailer may tie up in a trailer park, and the railroad foots the bill.

Aside from the usual advantages associated with the greater mobility of these gangs when housed in trailers, the railroad has found they have lessened the need for careful advance planning of work. When the gangs are housed in bunk cars, it is necessary, in order to have as little lost motion as possible, to line up work in a particular vicinity a week at a time.

With the gangs equipped as they are now, it is not nearly so necessary to plan work far in advance in order to prevent lost time in moving from one location to another.

On this road special-equipment operators, if housed in bunk cars, are provided with a motor car for getting to and from the job. When these operators are assigned house trailers, they are provided with a truck and the motor car is dispensed with.

If a special equipment operator wishes to do so, he is permitted to have his wife with him in the trailer, but in such cases it is required that he sign a permit releasing the railroad from responsibility. Incidentally, when an equipment operator is accompanied by his wife, the railroad has learned he is more apt to be available in times of emergencies.

Trailers have been in use on this

VICTOR mobile housing for work crews gives railroads *new economies*

Model 133. Thirty-three feet overall, tandem axle. Conveniently sleeps five men.

NOW, clean, comfortable and spacious living quarters can be economically provided for floating M/W work crews while on remote job locations, with VICTOR *Quality-Built* Mobile Homes. These mobile units feature an all-metal roof, all-welded steel chassis, crimped aluminum exterior, select birch interiors, and Victor's famed innerwall ventilating system. For sturdy dependability, easy maintenance, and reliable year-round service, you'll find Victor is your best investment.

Victor's special "Warranty of Quality and Service" gives additional value to every Victor unit.

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particular road since November 1952 and are reported to be giving satisfactory service. The road is now contemplating the possibility of equipping its division bridge and building gangs with off-track mobile housing units.

Example No. 3 . . .

- **All types of floating crews**
- **Both special-purpose and self-contained trailers**

One road is carrying out a program to trailerize practically all of its floating M/W work crews. Started several years ago, the program is now in full swing and the railroad has already acquired a background of experience in the use of trailers. According to its officers, this experience is such as to confirm their judgment in embarking on the program in the first place.

In undertaking the program it was reasoned that:

(1) There is greater flexibility and economy in being able to move housing units over the highways rather than by rail.

(2) That important economies can be realized by having a form of housing that is independent of the tracks so that it can be spotted at points closer to work sites than the nearest sidings.

(3) That the cost of upkeep of mobile, off-track housing is less than that of conventional bunk cars.

In addition the road had several more or less minor considerations in mind when the decision was made to trailerize. One of these was the sewage disposal problem being encountered when bunk cars were parked on sidings in or on the outskirts of municipalities. With the trailers it is a simple matter to avoid this problem. Another was that the road had followed the practice for many years of providing permanent housing for some of its M/W employees. Even though nominal rental was received for the use of this housing the net cost of its upkeep was felt to be far greater than that for trailers.

Closely related to the adoption of mobile, off-track housing on this road is the fact that it has carried out a far-flung reorganization of its M/W forces which has had the effect of incorporating a larger proportion of these forces in floating gangs. The purpose of the reorganization is to enable the road to take greater advantage of the economies of mechanized operation, and a feature of the new set-up is that section gangs have been virtually eliminated. Under the new system it has become more important than ever that the gangs spend a maximum proportion of the working day on the job, and use of mobile, off-track housing is seen as one means to this end.

Using Six Models

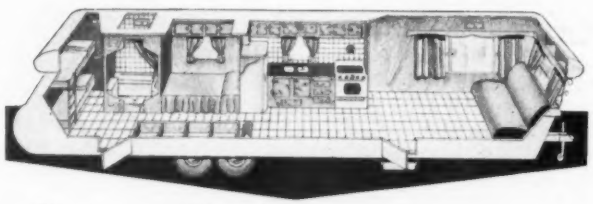
To meet the requirements of various sizes of gangs this road is using six types or models of off-track housing units, including both self-contained and special-purpose types. These are:

- A self-contained, two-man trailer, intended for use mainly by track-repair men (welders) and their helpers and by machine operators and their helpers.
- A four-man, self-contained unit for accommodating two, two-man track-repair gangs.
- A dormitory trailer providing sleeping accommodations for six men.
- A kitchen trailer which incorporates sleeping and living quarters for the cook.
- A dining trailer.
- A foreman–two-man trailer which has living and office accommodations for the foreman at one end and facilities for two men at the other.

All these trailers have oil-burning space heaters, and all those intended for use as sleeping or living quarters have showers, lavatories and water heaters. These trailers are almost entirely of aluminum construction, have insulated walls and roofs, and have ventilator fans for keeping fresh air circulating through them. All the trailers are wired for electric lighting.

How They Are Moved

Transportation of the trailers on this particular road is no great problem. It was already relying heavily on highway trucks for transporting men, materials and equipment, and all trucks have now been provided with trailer hitches so that any of them can be used for hauling the trailers if occasion demands. Some of the outfits consist of two or more trailers, and several trucks may be assigned the task of moving them if this seems advisable. Moves may be made during the day while the gang is working, at night or over weekends. Payment of overtime for laborers moving the trailers is not considered objectionable in the interest of having the trailers at the new location when they are needed.



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DETECTOR CAR (left) for picking up head and web separations and bolt-hole breaks by ultrasonic means has been developed on the Santa Fe. An adaptation of the Fairmont Hy-Rail car, the vehicle moves along at up to 16 mph. When indication of defect appears on chronograph tape (above), car is stopped and a local check made.

News Briefs in Pictures . . .

OBSTACLE COURSE for locomotives (right) is used by General Electric to study locomotive reaction to abnormal track conditions. The ½-mile "engineer's nightmare" has three sets of rails. One simulates staggered low joints with a difference of ¾-in between high and low spots; a second pair of rails has a 1½-in difference. The third has a ¾-in line wave in each rail length, followed by a 1½-in line wave.

CATERPILLAR PARADE for the press. On June 2 at Peoria, Ill., the Caterpillar Tractor Company was host to more than 100 magazine and newspaper editors and publishers. Highlight of the day-long round of activities was a demonstration of almost $2 million worth of equipment at the company's 800-acre Peoria proving ground. Activities on June 2 were prelude to an exposition which caterpillar held for more than 500 of its distributors, auxiliary equipment manufacturers and field representatives.

WHAT'S THE ANSWER? . . .

. . . a forum on track, bridge, building and water service problems

Splitting of Box-Heart Ties

How can the splitting of box-heart bridge ties be prevented? Will the insertion of dowels in both directions at both ends of such ties prevent splitting? Can this practice be justified? Explain.

No Known Preventive Method

By R. P. A. JOHNSON
Chief, Division of Physics & Engineering,
U. S. Forest Products Laboratory,
Madison, Wis.

A lot of time and money have been spent trying to obtain an answer to the question: "How can the splitting of box-heart bridge ties be prevented?" Up to date, the answer is: "There is no known practical method of preventing the splitting of box-heart ties." There are, however, a number of methods used to reduce or minimize it.

The Railway Tie Association's Committee on Checking and Splitting of Crossties has studied the problem for a number of years. In a report in the December 1952 Crosstie Bulletin this statement is made: "It must be remembered that checking of wood during drying is a natural phenomenon and one that may not be entirely eliminated without great expense."

The committee report lists a number of methods that minimize checking and splitting both before treatment and after the ties are placed in the track. These control methods include proper stacking, use of anti-checking irons, use of dowels, end coatings, chemical seasoning, incising, vapor drying, controlled air seasoning, and surface coatings. There is considerable difference of opinion as to the value of any of the methods. Any of them will help, but it probably requires a combination of them to obtain the best results. It was the committee's opinion that controlled air seasoning, to slow down drying was most important.

The committee reported in some detail on the effectiveness of anti-checking irons. A table in the previously mentioned report shows the results of an inspection of 5,000 red-oak ties, half of which had S-irons and half no anti-checking devices. There was little difference in the number of split ends in the two groups. The committee felt that data on other species and other locations were needed before general conclusions could be drawn.

The replies of 23 railroads to a questionnaire showed that 13 were using anti-checking irons exclusively and considered them satisfactory. Six roads had discontinued anti-checking irons in favor of dowels because they found anti-checking irons ineffective or because they believed they actually increased checking. One railroad reported experimenting with anti-checking devices and thus far had found no difference in the amount of splitting in the ties having irons and those without them.

The reply of the 23 railroads on the use of dowels shows 9 roads using dowels. Six of the nine use dowels regularly, one in the main line only, and two use them in limited quantities. Only one road applies dowels to all main ties before seasoning. The other eight roads employ selective doweling after seasoning. One road uses them only for salvaging split ties.

The Taylor-Colquitt Company, Spartanburg, S. C., started a test of doweled ties in September 1950. The results of that test are reported in the December 1952 Crosstie Bulletin by W. Henry Caban. The test included 100 Grade 4 and 5 mixed-oak crossties doweled 100 per cent with two dowels in each end. The doweling was done before seasoning. Of these ties, 27½ per cent developed split ends. That indicates that doweling both ends will not prevent splitting. The cost of 100 per cent doweling is reported at 42.8 cents per tie. The author believes, however, that the cost could be cut to 30 cents per tie.

Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the October Issue

1. What is the best procedure for correcting short defects in cross level of ½ in or less on tangent track? On curved track? Explain.

2. What are the relative advantages and disadvantages of installing radiant heating in railway buildings? Why? Explain.

3. What measures should be taken to insure thorough inspection of switches and switch stands? Who should be responsible? Which details should receive attention? Why? Explain.

4. When emergency repairs are to be made following a washout, what factors determine whether a pile trestle should be driven or the opening filled with cribbing? Why? Explain.

5. To what extent, if any, does tight gage (less than 56½ in) increase the incidence of rail defects (particularly detail fractures) in tangent track? Why? Explain.

6. Quick-acting valves are frequently used on the fill-up hoses at diesel watering stations. How can water hammer, resulting from the operation of these valves, be controlled or eliminated? Explain.

The question as to whether the cost of doweling can be justified is not easy to answer. It depends on the efficiency of the dowels. When data on the increase in the life of ties resulting from the use of dowels are available, it is relatively simple to determine whether their use is justified. Such data, however, are not generally available. Apparently some railroads believe doweling as a salvage operation can be justified, and one road believes 100 per cent doweling of main-line ties is justified.

The AAR has been cooperating with the National Lumber Manufacturers Association for 7 years on the problem of prolonging the life of crossties, especially as affected by checking and splitting. Work is still in progress on a one-step seasoning and treating process, tie coatings, and laminated ties. The results to date of these studies are reported by G. M. Magee in Vol. 54 and 55, Proceedings of the AREA.

The work at the Forest Products Laboratory on crossties has been largely on air seasoning. The results of some of the work are reported by J. S. Mathewson, C. S. Morton, and R. H. Bescher in the 1949 Proceeding of the AWPA.

Splitting Cannot Be Prevented

By W. R. Jacobson
Chief Tie Inspector & Treating Engineer, Minneapolis, St. Paul & Sault Ste. Marie, Minneapolis, Minn

The splitting of box-heart ties cannot be prevented but can be controlled by several methods. The shrinkage of wood through seasoning is a natural phenomenon and no mechanical device applied when the timber is green will prevent this shrinkage. However, these devices—banding, dowelling, ironing and bolting—tend to control the splitting and prevent the timber from opening excessively. In addition a considerable amount of work has been and is being done along the lines of artificial seasoning in order to control the splitting during the seasoning process.

Some good results have been obtained by the Vapor Drying Process on woods very susceptible to checking and end-splitting. Under investigation and laboratory work is a combined seasoning and treating process which aims at the reduction of splitting of ties. Almost all this work has been done primarily in relation to crossties and not specifically to bridge ties. Some excellent results are being shown in an indirect attack on this problem which is being made with the use of tie coatings and tie pads.

The life of bolts, bands and irons in most cases is shorter than the life of the treated ties and thus part of their effectiveness is lost. A dowel of recommended size, properly applied, will last the life of the tie.

In discussing double dowelling—vertical and horizontal—in both ends of a bridge tie several factors must be taken into consideration.

(1) Species of timber used,
(2) Density and speed of traffic,
(3) The incorporation of other structural or protective appliances or coatings.

First, the predominant species used for bridge ties are Douglas fir, southern pine and the oaks. Douglas fir and southern pine, both being soft woods, are more susceptible to plate cutting than the oaks.

Conversely the oak is more susceptible to end splitting than the soft woods. A further break-down of the oaks would show hill oak with far less splitting than lowland or bottomland oak. Thus one control of the splitting of bridge ties is the source of materials. Another factor is the location of the seasoning or storage yard. Wind, temperature and moisture play an important part in seasoning—consequently, thought should be given to the choice of treating plants and/or storage yards.

Second, and of utmost importance, is the density, tonnage and speed of traffic. The present service life of a bridge tie is a key factor in determining the amount of additional money that may be invested in prolonging it. Increasing the service life of a tie by 5 years may be entirely warranted where the average service life is 18 years but it may be a very poor investment where 30-year life is now being obtained. One must also bear in mind that the life of a tie is no longer than that of the rail-bearing area no matter how well protected the ends may be. The problem of tie-plate cutting and crushing is a prime problem whether the tie be on a timber trestle or a steel girder.

Third, the incorporation in the track structure of hold-down spikes or bolts, the use of tie pads and the surfacing of the tie with a protective coating all bear on the amount of money that may or should be spent to protect that investment.

In direct answer to the second question, double dowelling will not prevent but will control splitting. I do not believe double dowelling is necessary or justifiable. The splitting that is of first and prime concern is the vertical split. Any horizontal splitting would be adequately controlled in the normal design and construction of the track and bridge—spiking and bolting of the rail to the tie, the fastening of the tie to the structure (by hook bolts, etc.) and finally the fastening of the guard rail to the tie.

No Definite Answer

By W. D. Kenney
Bridge Engineer, Service Bureau, American Wood Preservers' Association, Chicago

It is quite common practice at most plant to drive "S" or "C" irons in the ends of hardwood ties to prevent seasoning checks. Some roads have had considerable success in reclaiming old split ties or in arresting the progress of cracks that have started. Cracks or openings are closed tightly under force and dowels are inserted across the planes of cleavage to prevent any reopening of the split once it has been closed. Spiral dowels driven to a tight fit in pre-bored holes form threads in the surrounding wood and hold the split parts firmly together. Automatic machines that place dowels in ties, usually 2 to 3 in from the end, have been developed and are in use at some plants.

Bridge ties, because all faces are exposed to circulating air, are subject to more rapid surface drying than crossties in which the rate of moisture change is retarded by contact with the ballast. The hardwoods are more susceptible to checking than the conifers or softwoods, but boxed-heart timbers of softwood species—those that contain the pith—frequently check and split badly under usual air seasoning conditions where disproportionate drying in different parts of the cross section can not be prevented. Splitting may also occur after ties are in service as they are seldom completely seasoned when installed.

Shrinkage in wood takes place only with the loss of moisture below fiber saturation point. This varies for different species, but is somewhere near 25 per cent for most woods.

Wood shrinks much more tangentially to the annual rings than

it does radially or across the rings, the proportionate rate varying from a minimum of 4 to 5 for some wools to more than 2 to 1 for others. As a result, perimeters shrink before any corresponding reduction in the cross section occurs and splits that extend from the pith outward to the surface develop along a radial line to relieve the strain. Although cracking is caused by a different phenomenon than end and surface checking, checking and cracking are inter-related. If checks originate in the ends or on the surface, they start planes of weakness and are likely to develop into cracks or splits that extend from the center to the surface of boxed-heart pieces.

Whether all ties should be doweled, or only those for which a need is indicated after seasoning, depends on costs, losses incurred from splitting, and other considerations which probably vary from time to time and on different roads.

It is desirable, of course, to arrange dowelling or ironing so that extra or repeated handling can be avoided. There is no way to predict which ties will split until some seasoning has taken place. There should be sufficient seasoning to establish the checking pattern so that the dowels can be placed most advantageously.

Splitting of ties has been the subject of considerable study and research in recent years and a great deal of information has been accumulated. To date, however, there are insufficient data to permit any definite answer that fits all cases.

Subdrainage Vs Grouting

What are the relative advantages and disadvantages of subdrainage systems and grouting for the stabilization of roadbeds? Under what conditions is one method more suitable than the other? Why? Explain.

Three Causes of Instability

By J. P. Datesman
Engineer of Track, Chicago & North Western, Chicago

My opinion is based on about four years of surveys, studies and practical applications. It is my belief that the cause of roadbed instability falls under three general conditions: (1) Flowing underground water; (2) water pockets; and (3) slides. Many water pockets eventually turn into slides if they are permitted to exist without the installation of some form of drainage.

Subdrainage systems work to advantage in all types of roadbed stabilization, but produce the best results where moving subsurface water is involved. There are many locations, especially in cuts and in some cases on fills, where underground water causes soft-track conditions. Intercepting longitudinal drains in cuts or on side hills, and in some cases lateral cutoff drains at the beginning of fills, will intercept this water and stabilize the roadbed.

In many cases water pockets have developed in cuts and on fills due to trapped underground water or faulty embankment construction. This can, in many cases, be corrected or slowed down by the use of lateral drains of perforated pipe. It has been noticed, however, in many cases where water pockets exist, that lateral drains do not cure the situation, but simply slow down settlement while in other instances settlement over water pockets has been entirely cured by lateral drainage. There is one thing sure and that is that the flow of underground water, either in cuts or on fills, can be definitely stopped by proper application of subsurface intercepting drainage.

Pressure grouting, in my estimation, produces the best results where definite water-pocket conditions exist either in cuts or on fills. This is also true where water pockets have been permitted to develop in embankments, and their growth has pushed out the embankment sides causing slides.

Water pockets are generally caused by moisture that is trapped within the embankment. As settlement takes place and additional ballast is placed, the water pocket gradually gets deeper and wider as surface water continues to seep down through the ballast material. The only definite cure appears to be the sealing out of this surface water. This can best be accomplished by pressure grouting which forces cement grout from the bottom of the pocket up to the top through the minor channels in the ballast. This, of course, seals out the route for excess surface water. When the impervious material at the bottom and sides of the water pocket is dried up, the embankment generally stabilizes and settlement ceases.

Many slides that are the result of pushed-out water pockets can be cured entirely by pressure grouting. It has been found that the best method is to start at the bottom of the embankment and gradually grout, in a regular pattern, until the top of the embankment is reached. Such action shuts off the point of access of surface water at the top of the embankment and in most cases stops the sliding condition.

There are some slides, of course, that are caused primarily by unstable conditions of the soil on which the embankment is placed. Of course, such a condition cannot be cured by pressure grouting but may be cured or slowed down by many other known methods.

Both methods of stabilization are definitely practical but, as stated above, each has a specific field of conditions under which it functions to advantage.

Study Subsurface Conditions

By Troy West
Engineer of Track, Union Railroad, East Pittsburgh, Pa.

An unstable roadbed, resulting in abnormally high maintenance cost, calls for a quick and positive remedy by maintenance men faced with the problem of working with reduced budgets. The relative values of subdrainage systems and pressure grouting for stabilization of roadbeds should be considered on the basis of their effectiveness in comparison with the cost of more expensive methods, such as piles and retaining walls, which may be used with no better result. The decision as to which method to use should be based on a thorough investigation and study of the cause of the disturbance.

Uncontrolled water can be the cause of disturbance of subgrade

in sections of track which have been in service for years. Where it is necessary to re-surface track repeatedly on an embankment or through flat country mud pockets may develop in yielding soil materials. These pockets are enlarged by repeated tamping of ballast into the subgrade. As all surface water filters into the pockets the material is churned deeper into the soil by moving wheel loads. It would take years for such a pocket to grow to a size that would result in an embankment displacement. In my opinion, serious future trouble can be avoided by correcting the underlying trouble when the first indications occur. Correction of such trouble at its start could in many instances be accomplished by installing a lateral system of open-jointed small-diameter drain pipe.

Along with others, we had two rather troublesome side-hill embankments supporting two main tracks, which were placed about 50 years ago. One embankment was pressure grouted in 1943, and the other was grouted in 1946; both are now stable. In each section, the embankments are on side-hill approaches to masonry arches which provide crossings of normal water courses. Deep pockets had developed beneath the tracks from repeatedly restoring surface where the subgrade yielded. The underlying material at each location consisted of several feet of ballast material on a clay seam on shale rock sloping about two feet in five. Unusual bulges along the slopes of the embankments were evidence of long-time lateral movement of materials on the clay seam.

On the embankment grouted in 1943, an open shaft about 22 feet deep was sunk from which an inspection of the underlying material revealed that the area was free of underground water. It was easy to see where the injection points for grouting should be delivered. It was also evident that this condition had been in the process of development for years. The unstable condition was such that the track could be maintained to proper alinement and grade only by abnormally excessive maintenance. Had this condition been corrected in the early stages of its development, the work could have been done with less cost.

Disturbances in roadbed have occurred in areas where quick runoff from adjacent new developments has been greater than the present drains could accommodate. It was obvious in these instances that the replacement of the old with a larger subdrainage system was the proper remedy. Unstable roadbed which has developed in rock cuts where original excavation did not provide for adequate ballast section and side ditches, may be effectively corrected by installing open-jointed drain pipe placed laterally, and by lowering the side ditches. Drainage systems must be provided for normal water courses in the right-of-way area to avoid washouts and to protect the subgrade.

Based on my experience with this subject, it seems that certain fundamentals must be considered in arriving at the relative advantages and disadvantages of subdrainage systems and grouting for the stabilization of roadbeds. The problem facing the maintenance engineer with unstable roadbed is to re-establish the bearing value of the subgrade at a minimum cost.

Light soil materials on impervious soils in embankments, which have been disturbed by filtering surface water, can, in my opinion, be stabilized by grouting. This method of correction can be done cheaply and effectively under traffic. This could not be done by a subdrainage system, because it would be almost impossible for drains to dry up the area and lack of density of the disturbed material would still remain a source of trouble.

At locations where roadbed of proper soil consistency and compaction has become unstable over the years, it would be well to check for faulty drains, and then either correct the present system or construct a new one.

Favors Grouting

By J. R. Rushmer

Roadway Engineer—System, Atchison, Topeka & Santa Fe, Amarillo, Tex.

Drains of many kinds including rock, French, wood box, clay tile and perforated pipe are designed to remove entrapped water from roadbeds. Grouting restores drainage by filling with sound material, voids that can and do entrap water. This process displaces the water and restores the load-bearing power of the roadbed.

Entrapment of water occurs principally in clay or other plastic materials. Once begun it progresses indefinitely (at various rates depending on many factors) causing the track support to deteriorate and to become unequal. This causes rough track and excessive tamping of the ballast section.

Drains can remove free water only. Therefore, they often do not completely cure the trouble. In such cases the roadbed material below the drains becomes saturated, causing roadbed failure. Heaving and settling of drains, lateral misalinement and stoppage with mud or other materials are also causes of subgrade failure. Any type of drain is difficult and costly to repair.

Drains installed on account of unstable roadbed should not be confused with drains placed at shallow depths at turnouts, in yards, and sometimes in intertrack spaces and around buildings to take care of surface drainage. Surface drainage will always require some installations of perforated pipe.

Installation of drains on account of instability requires considerable labor and material and a good deal of disturbance of the roadbed. This is especially true in those cases where lateral drains must be placed across the roadbed in the ballast section under the track structure. At present-day prices, drains usually cost as much or more than grouting except possibly on high fills. Repairs to drains are expensive and awkward and disturb the roadbed as much as the initial installation did. Sometimes drains cannot be satisfactorily repaired and must be replaced at different locations.

Grouted roadbed that does not fully provide the needed results can be regrouted without any particular difficulty and without disturbing previously placed grout. Generally regrouting does not disturb the roadbed as much as initial grouting did. Most additional grout is usually pumped into the roadbed below the initial grout. This is because instability sometimes occurs at great depths, often in the natural ground below fills, a fact that was not recognized in the early days of grouting.

In the early days of roadbed grouting lack of knowledge resulted in partial failures. This was because the grout placement was not carried to great enough depth and/or all voids in the grouted area were not filled. It is now considered necessary to carry on exploratory work along with most grouting jobs, to make sure that grout is placed deeply enough.

Actually, on some extensive grouting jobs, considerable mileage

was deliberately grouted to only compartively shallow depth to get immediate results and to avoid delay to extensive rail-laying and ballasting operations. This work has been followed up by much deeper and heavier grouting in slide areas, high fills and other difficult places, without disturbing the new track structure and usually without slow orders.

In many cases grouting has been done through territories where several types of drains have been installed and failed for any of many reasons. In these cases the drain, as well as voids above and below the drain, has been filled with good results. A good deal of grouting has been done in natural ground below the toes of fills with excellent results. These fills have ranged from very low to very high and have in some cases included slides.

If full advantage is taken of grouting knowledge, accumulated during the last 12 to 15 years, good results can be expected and are almost immediately apparent. Grouting generally pays for itself very quickly in reduced labor and in elimination of slow orders.

Failure or partial failure of grouting jobs is almost always the result of failure to do two things.

(1) Place all grout that the roadbed will accept.

(2) Place grout at maximum depth at which it will be accepted.

The tendency to measure progress of grouting gangs in track-feet is a mistake. Such practice has been the cause of poor results. The true measure of grouting progress is the quantity of grout placed per track-foot. This of course varies, depending on many factors, between wide limits.

Protecting Swinging Doors

What protection should be applied to multiple swinging doors in passenger stations to prevent their quick rebound and possible injury to patrons when they are opened quickly? Explain.

Use Double-Acting Checks

By A. E. Biermann
Principal Assistant Engineer, Terminal Railroad Association of St. Louis, St. Louis, Mo.

Double-acting door checks should be applied at either the sill or head of multiple swinging doors to avoid possible injury to patrons. There will be no rebound or free swinging of the doors with the use of double-acting checks. When released from an open position the doors will swing evenly to a closed position without rebounding.

Patrons often are injured by getting their hands caught between the meeting edges of multiple swinging doors installed without door checks but having double-acting spring hinges. This type of accident can be minimized to a large extent by installing soft-rubber astragals on the meeting edges of these doors.

Provide Proper Door Checks

By W. H. Roberts
Superintendent of Safety, Chicago & North Western, Chicago

Practically all of the doors in our stations are equipped with suitable door checks which prevent their being opened or closed quickly. This naturally averts injuries to persons coming through the doors in opposite directions.

We have seen doors in some stations which swing in both directions. We would object to any such installations on our line.

In order to preclude possibility of persons being struck by a door being pushed open by persons coming from the opposite direction, doors could be labeled "in" and "out". However, I sometimes question whether signs are of any value, judging by the number of people who ignore warning signs.

Summing it up, the answer is simple. Provide proper door checks. These should be inspected periodically to make certain they are functioning properly.

Salvaging Underground Pipe

The introduction of diesel power on the railroads has resulted in the retirement of many water stations. To what extent is it economical or desirable to salvage the underground sections of the larger sizes of pipe at these abandoned facilities? Explain.

Consider From Two Angles

By E. L. Anderson
Chief Engineer, St. Louis-San Francisco, Springfield, Mo.

This question should be considered from two angles. First, the economical, and second, the desirable side.

The economical side presents a different problem for each location. Economical considerations that must be given consideration are: What is the physical condition of the pipe involved? And what will it cost to salvage the pipe?

From the physical condition, the value of pipe to be salvaged should be set up. It then becomes necessary to determine the cost of salvaging the pipe, making it available for re-use or for sale. In arriving at this cost serious consideration must be given the matter of interference with other activities of the railroad and how such activities will affect recovery.

The desirability of a project may depend not only on the economical side of the situation but also the need for the material released and its availability from other sources. It may be desirable to sell the pipe in place and permit the purchaser to recover the pipe. This might net a greater return to the railroad than if the pipe is salvaged and re-used.

In one instance on our line, recovery was made of 2½ miles of pipe which paralleled a highway where a motorized crane could be used for uncovering and loading it in trucks. The pipe was recovered at a time when this particular pipe was badly needed and difficult to procure quickly. This proved not only economical but likewise desirable.

At some locations where pipe was not particularly needed for any

project, and the recovery cost was beyond salvage value, it was merely abandoned and left in the ground. Several cases have arisen where pipe was sold in place, the purchaser either recovering or making use of it at the location where it existed.

No hard and fast rule can be set up but each case has to be considered on its merits.

An Economic Question

By L. P. Drew
Assistant Chief Engineer, Union Pacific, Omaha, Neb.

The question as to whether underground sections of large sizes of pipe should be removed is usually decided on a purely economical basis. In other words, unless there is some particular reason to the contrary, pipe lines are abandoned in place rather than removed except where the cost of removal is less than the cost of new pipe. In most cases, particularly where pipes are under or adjacent to tracks, it is seldom economical to expend the amount of labor necessary to remove the pipe.

In certain soils and for pipe lines that convey highly acid or alkaline waters, pipe is usually so badly corroded or scaled that it is not worth the cost of removal.

Use Intertrack Space

By L. D. Shelkey
Office Assistant to Chief Engineer, Bessemer & Lake Erie, Greenville, Pa.

Rail and the proper amount of the required fastenings should be unloaded along each side of any track on which rail is to be renewed, regardless of whether the track to be relaid is an inner or outer one in multiple-track territory. The desirability of having materials unloaded as close as possible to the point of use is quite apparent. The prime factor governing this viewpoint is expediency, which results in more economy in handling materials in rail-laying operations.

Bolts, nutlocks, spikes and rail anchors, generally unloaded in kegs, require special attention, after being unloaded from a work train, in that they must be moved to satisfactory clearance from both tracks in the intertrack space. Narrow shoulders on fills sometimes make it necessary to unload fittings in intertrack space where it would be more desirable to have some of the fastenings on the field side.

It is recognized that materials lying in intertrack spaces create certain hazards to operations. Hence, care must be used in designating the limits of the section where material has been unloaded. This can be done in the form of notices to employees of the operating department.

Safety and Availability Govern

By M. L. Frederick
Division Roadmaster, Northern Pacific, Spokane, Wash.

In order to determine proper lolation for distribution of rail and fastenings, the following factors should be considered:

Safety—Material should be distributed so as to prevent tripping hazards. In some instances it would be preferable to distribute in the intertrack space when the outer area is used for walkways by trainmen, car inspectors and others, or where yard or industry tracks diverge. Bulky containers, such as spike and bolt kegs or boxes, and switch material, should be stockpiled or stored at convenient locations and distributed immediately in advance of relay work. A cautionary bulletin train order should be placed describing exact locations where all material is distributed.

Availability—It is most desirable to have rail distributed as close to the work as possible in order to expedite relay work and avoid swinging or carrying rail over track. Relays in multiple-track territory should be scheduled to follow distribution without delay.

Conditions Govern

By R. W. Putnam
Engineer Maintenance of Way and Structures, Southern Pacific, San Francisco, Cal.

On the Southern Pacific it is the general practice to unload new rail and fastenings on the shoulders. However, due to the configuration of our railroad, this cannot be set as a hard and fast rule. Therefore, we occasionally unload in the intertrack space, depending on governing conditions explained below.

The major factors affecting choice of unloading site can be grouped under: (1) Safety; (2) protection of new material; (3) economics; (4) physical conditions; and (5) rail-laying methods.

Safety is the consideration underlying almost every cause of action taken on a railroad, except those based upon economic feasibility or to satisfy rules or standards. In the unloading of new rail and fittings one should consider their effect upont the safety of trains, trainmen, and sectionmen.

The new material should be placed clear of the track in such a position that rail will not shift from ground vibration, or other disturbances, and come to rest foul of the track. Further, rail and trim should not be scattered in a manner hazardous to trainmen. Relating to this point one of our maintenance-of-way rules reads: "In yards and at stations, rail should be placed in piles out of the way of trainmen and in convenient location for redistribution just prior to laying." Finally, the new material must be so unloaded that during relay it can be handled quickly, easily, economically and safely.

Rail laying is an essential element in programmed maintenance that recurs with unrelenting certainty. Frequency of relay is determined not only by the obvious conditions, such as weight of rail, track characteristics, tonnage, effectiveness of rail lubrication, and the level of standards, but also by the way new material is treated during handling. Unless new rail is properly protected at the time it is unloaded it can be permanently damaged. This results in shortened rail life as well as poor riding track as long as it remains in place. The character of shoulders, whether narrow or wide, steep or flat, rock or otherwise, determines the selection of the location for unloading.

Also, there is always a possibility, remote though it is, that rail and fastenings on the ground might be damaged by derailed equipment. This new material, in turn, can compound the overall damage by causing additional cars to derail. It is apparent, therefore, that the rail and material left between tracks stands a twofold chance of involvement in a derailment.

Ditches must be kept open to insure drainage. Frequently in cuts in mountain territory there isn't sufficient room to provide good shoulder after a ditch is in. Since any obstruction in the ditch tends to back up drainage and turn water under the ballast section, it is

practically inevitable that rail and trim be placed in the intertrack space.

Present price per ton of rail and fittings is high. The fact that some material slides down steep banks where shoulders are narrow is a deterrent to unloading at these locations. All too often, sectionmen who unload the fittings are not the ones who lay the rail, and the latter may not be aware that tieplates, joints, etc., have disappeared down the slope and lie concealed in the vegetation below. While the rail and track material can be piled in an open area at the end of cut or fill, it must be realized that such double handling is a non-productive expense.

Rail-laying methods affect the choice of unloading site. Where rail is laid by hand (without crane or rail-handling machine) it is extremely important that the material be unloaded to provide for the minimum amount of jockeying of rail during laying, and the footing conditions and distance of lift should be considered.

We feel that this question should be thoroughly reviewed in the light of controlling factors toward the end that maintenance men will derive the most benefits from the least expense. Each case may present a slightly different pattern, suggesting the desirability of analyzing each problem separately and making a decision based on the tangible factors.

No Final Answer

By T. M. VON SPRECKEN
Assistant to Chief Engineer, Southern, Washington, D. C.

This question cannot be answered with finality. The depth to which it is buried, the age and condition of the pipe all affect the answer, and each proposition must be studied and decided on its merits.

As a general rule, the salvaging of buried pipe from abandoned water-station lines has been found to be uneconomical. Most of it has been in the ground for a long time and requires cleaning before it can be re-used. This, added to the cost of recovering the pipe, generally leaves little or no profit from the operation.

In times of scarcity of new material it may be advantageous to recover pipe left in the ground either on a basis of necessity or economy.

On our road, in practically all cases studied, the conclusion was reached that it was best to leave the pipe in the ground.

Weigh Each Operation on Merit

By H. G. CARTER
Chief Engineer, Central of Georgia, Savannah, Ga.

The matter of recovering cast iron pipe from abandonned watering facilities resolves itself into a problem in economics.

Since cast iron pipe is sold basically on a weight basis, which varies as the diameter and class of the pipe, and because the salvaging of the pipe presents a different problem at each location, each salvaging operation must be weighed on its own merits.

Consideration must be given to the length of time the pipe has been in service as well as the type of water that has passed through the pipe while in service. In most instances we find that after long service the pipe is partly filled with sediment. This, in some instances, results from chemical deposits and presents a difficult problem in cleaning the pipe for reuse.

In some cases engine-water pipe lines are laid adjacent to tracks, paralleling them for some distance, which increases the cost of recovery.

Recovery of this pipe also results in softing the roadbed to the extent that future track maintenance is increased for the period of time the roadbed is recovering its stability. Again in many instances pipe lines were laid across open country from the track to the source of water supply. Some of these locations have been developed and we find that the surface of the ground has been changed due to filling, street paving, and in some instances buildings have been erected over the location.

Were there any restrictions on the sale of cast iron pipe, salvaging would be more advisable, but with the present market the salvage cost must be given first consideration. This is because railroad labor is paid a high rate and few roads are equipped with the proper type of machines to enable them to carry on an economical salvaging operation.

Where there are no obstructions to the work of salvaging, and this work can be carried on with a drag line, we have found it advisable to recover cast iron pipe as follows:

Diameter of pipe	*Depth of cover*
6 in	Up to 3 ft
8 in	Up to 4½ ft
10 in and over	Up to 6 ft

Using Intertrack Space for Material

When renewing rails in multiple-track territory, should the new rail and fastenings be unloaded in the intertrack space or on the shoulders? What factors affect the choice of either location? Why? Explain.

Study All Factors

By G. W. MILLER
Engineer Maintenance of Way, Canadian Pacific, Toronto, Ont.

Methods to be followed when unloading rail in multiple-track territory will depend on the usual factors that affect any railway maintenance or construction program. A procedure that may be acceptable at one location would not necessarily be satisfactory in another.

Maintenance officers concerned with the project must study all factors and determine the procedure which is most economical.

The following items, or a combination of them, will determine if rail and fastenings may be unloaded in the intertrack space or on the shoulders:

(1) *Season*—In northern areas track materials should not be unloaded between tracks during winter months when the ground is frozen or when snow is on the ground, unless such material is to be installed immediately. If this material is covered with snow after being unloaded, employees may trip over the rail while walking between the tracks.

(2) *Traffic*—Where trains are frequent, it may be possible to delay them by issuance of train-order protection or by flag protection as material is being unloaded from the side of the car by means of a

crane. Some type of protection should always be provided where the boom of the crane or material being unloaded will foul the clearance lines of the adjoining track.

(3) *Unloading Equipment and Tools*—Unloading hooks with a narrow roller are in use for unloading rail from flat cars. The rail is dropped over the side of the car. As the train moves forward the rail rolls to the ground with a short drop at the end of the tie without affecting the adjoining track. This device will permit material to be unloaded in the intertrack space.

Where materials are supplied in open-top gondola cars and handled with a crane, it is not desirable to unload in the intertrack space unless flag or other protection is provided for trains on the adjoining track.

When the rail or other material has been placed on the ground, someone should see that it cannot slip toward the running rail due to vibration.

(4) *Rail-Laying Equipment* — Where a Burro or other type of self-propelled crane is used to pick up rail and place it on the tie plates, very little time will be lost if this rail is handled from the shoulder rather than from the intertrack space. The desirable procedure, however, is to unload the rail and fastenings at the ends of the ties, whether on the shoulder and/or in the intertrack space to minimize handling.

Shoulder Unloading Desirable

By C. E. Weller
Division Engineer, Illinois Central,
Jackson, Tenn.

If the shoulder is wide enough and can be reached, it is desirable to unload the new rail material in this area. In metropolitan areas, industry tracks will be switched from the shoulder area and, in many instances, there will not be room for track material without creating a serious injury hazard. In such cases, there is no choice but to unload in the intertrack space. Then too, when rail is laid on the center tracks in territories where three or more tracks are in service intertrack space must be used. When it is necessary to unload in the intertrack area, work must be performed under flag protection and, in many cases, it is desirable and necessary to restrict the speed of trains on the adjacent tracks.

PRODUCTS OF MANUFACTURERS . . .

. . . new, improved equipment, materials, devices

CAMBERED BOOM FOR DRAGSHOVELS

GREATER digging depth, digging radius and digging force, plus easier dumping, are said to be advantages derived from the new cambered boom now being offered by Bucyrus-Erie Company, South Milwaukee, Wis.

The new boom for mounting on the Model 10-B, 15-B and 22-B dragshovels is reported to be particularly useful in digging sewer trenches, basements, pipe lines or conduits, as well as for other utility and small contracting jobs.

Cambering of the boom allows extra room for digging over corners of the crawlers and also allows a dragshovel to be positioned farther from the edge of an embankment while working.

The dipper design has also been changed to provide more heel clearance; an increased slope to dipper sides for cleaner dumping; a longer lip which digs in easier and offers a longer shelf for heaping higher loads; and side cutters with straight cutting edges which offer less resistance to penetration. Another advantage stated is that the dipper can be raised higher and brought in closer without spillage. A deflecting sheave on the underside of the boom prevents the dipper from going into the toggle.

TRACTOR-SHOVELS

TWO COMPLETELY NEW four-wheel drive Payloader tractor-shovels have recently been announced. These machines, Model HU of 1-cu yd heaped capacity and Model HH of 1½ cu yd heaped capacity, are a product of The Frank G. Hough Company, Libertyville, Ill. According to the manufacturer's announcement, the principal feature in the design of these models permits 40 deg of bucket "breakout" at the ground level. Also, the use of breakout pads on the ground as a fulcrum for leverage in the "pry-out" action is said to transfer opposing load forces directly to the ground instead of through the wheels and hydraulic system of the machine. Both units are avail-

able with either gasoline or diesel power. They are equipped with sealed pressurized hydraulic systems and 12-volt battery systems on the gasoline-powered models. Torque converters, full-reversing transmissions, double-acting hydraulic rams with chrome-plated piston rods, hydraulic brakes and power steering are standard on both models. Load-shock accumulator devices are optional.

WEED AND BRUSH KILLER

TWO NEW developments in its products for controlling weed and brush growth on right of ways have been announced by E. I. Du Pont de Nemours & Co., Wilmington, Del.

One of the developments is a new, more concentrated formulation of "Ammate" weed and brush killer, to be known as "Ammate X." The new formulation contains 95 per cent of the active ingredient ammonium sulfamate, instead of 80 per cent. The new product should normally be used at the rate of 60 lb per 100 gal of water instead of the 75 lb formerly required. Containers for the new formulation will be 60-lb bags and 40-lb fiber drums, corresponding to the previous 75-lb and 50-lb containers.

Like its predecessor, "Ammate X" is recommended as a foliage spray for control of woody plants and as a stump treatment to prevent resprouting. The chemical is nonvolatile and reportedly does not leave soil unproductive for long. It contains a corrosion inhibitor and is claimed to be low in toxic hazard to people and animals when used as directed.

The other development announced by DuPont is a new method of brush control using "Telvar W" weed killer. The herbicide is now recommended for right-of-way use in six states as a chemical control of trees and brush by soil application. For effective kill, the stem of the plant is encircled with a ring of spray, about a foot from the base. It is not necessary to wet the stem of the plant. The sprayed ring should be about 4 in wide. Treatment is reportedly effective at any time of the year. Two to four ounces of the chemical are used in each gallon of spray.

Present recommendations for this method of using "Telvar W" apply to only Oklahoma, Texas, Kansas, Missouri, Arkansas and Louisiana. Test work is continuing, to see if the same recommendation can be adapted to climatic conditions, plant species and soil types in other areas. Woody plant species which have been controlled by this method include elm, red cedar, persimmon, hackberry, willow, sumac, buckbrush, and various species of oak.

Applications made during the growing season usually affect the plant within about a month, according to reports. Applications made during the dormant season may not show any effects until after the plants leaf out.

EARTHMOVER IMPROVED

A BOOST in engine power to 262 hp is a feature of the new International 75 Payscraper, announced recently by the International Harvester Company, Chicago.

To take care of the 31½-per cent boost in power, the entire power train has been strengthened. Increased gear reduction at the final drive is said to put less torque on the transmission, and reduce shock loads.

Radiator capacity has been increased for greater cooling of the larger engine. Improvements have been made in the air system, with a new compressor, new governor controls and a new air-line arrangement being added.

The Payscraper is the largest high-speed, rubber-tired earthmover in the International line. With the larger diesel engine, it can scoop up an 18-cu yd heaped load, then carry the load at more than 24 mph.

Other features of the new Payscraper are improved hydraulic steering, a new disc-type cable control and a new air-assisted clutch release.

RUBBER-TIRED UTILITY CRANE

A NEW SELF-PROPELLED one-man operated, rubber-tired utility crane with 15 tons lifting capacity, known as the UC-68, has been announced by the Link-Belt Speeder Corporation, Cedar Rapids, Iowa. It is said that this crane works equally well with crane, clamshell, dragline, lifting-magnet, shovel and hoe attachments. It has a travel speed of 7 mph. The UC-68 is equipped with an independent rapid boom hoist which provides controlled power for raising and lowering the boom. The booming-up device is friction-clutch driven while booming-down is controlled mechanically by a ratchet-and-pawl mechanism which acts against engine compression, or a boom-hoist lowering clutch. The crane is also equipped with reversing clutches on either or both main drums and independent swing and travel.

Power is supplied by a gasoline engine equipped with a torque converter. A two-speed travel gear

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arrangement provides a range of two travel speeds in each direction. The machine is equipped with

four-wheel brakes and a parking brake which is actuated from the operator's position in the cab.

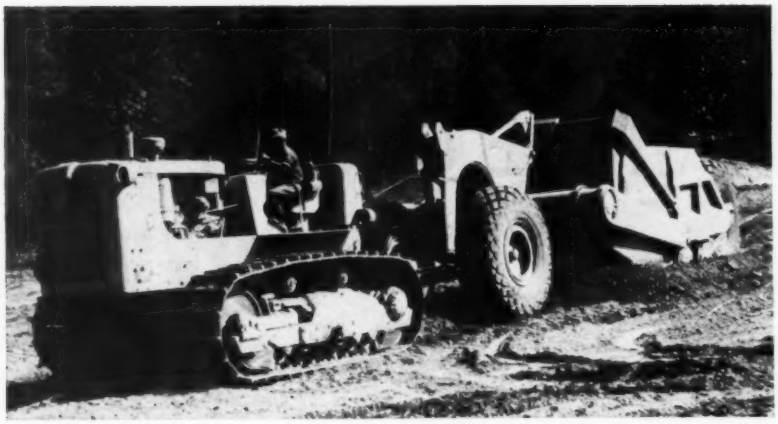
CRAWLER TRACTOR

A TURBOCHARGED 286-hp diesel engine drives the new Caterpillar D9 crawler tractor which is reported to develop 230-drawbar hp, according to an announcement of the manufacturer, the Caterpillar Tractor Company, Peoria, Ill. This new tractor has a length of 17 ft 10 in; a width of 9 ft 11 in; and a height of 8 ft 9 in excluding the exhaust pipe and air cleaner. The ground clearance is 21 in and the gage is 90 in.

The 6¾-in by 8-in, 6-cylinder, turbocharged Caterpillar diesel engine is said to deliver 286 hp at 1200 rmp for both the torque converter and direct-drive models. It has a 2-cylinder gasoline starting engine equipped with a 6-volt electric starter. The engine features short valve push rods, made possible because the camshaft is set high in the block; stationary oil jets which provide a continuous stream of oil to cool the pistons, camshaft and followers; and steel-backed aluminum bearings with the lower half of the center main bearing designed to take the camshaft thrust on a flange-type bearing.

Pressure lubrication and full-flow filtration are provided in the engine, transmission, steering-clutch-release booster and each final drive. Pressure lubrication is also provided for the oil clutch and starting engine.

The torque converter model has a three-stage, 5-to-1 torque multiplication unit which uses diesel fuel as the hydraulic fluid. Torque-converter fluid cooling is provided



by a water-type heat exchanger. A 19-in single-plate dry type flywheel clutch is used with this model. Three forward speeds up to 7.8 mph and two reverse speeds are provided in the torque-converter model. The direct-drive model has six forward and six reverse speeds ranging from 1.6 to 6.8 mph.

All accessories are driven from a gear at the rear of the crankshaft to reduce torsional vibration. A constant power drive has been provided for rear-mounted equipment, such as cable controls, which is said to provide power regardless of whether the flywheel clutch is engaged or when the torque converter is operating at lowest speeds.

The conventional drive D9 weighs 56,200 lb and the torque converter model weighs 56,650 lb.

PORTABLE SPRAYER

DESIGNED for use in weed-killing operations along the right of way, is a portable power sprayer with a 100-gal tank, announced recently by Farmrite Sprayer, Inc., Clyman, Wis.

Called the Brushmaster, the unit is powered by a Kohler K160 gasoline engine. The engine develops 6.6 hp and weighs only 80 lb. It has a silencer-type muffler, oil-bath air cleaner, flyball governor, fuel filter, ball bearings at both ends of the crankshaft and a dustproof, moistureproof breaker-point assembly. The engine, tank and control valves are mounted on a skid to permit easy loading and unloading.

AC-DC WELDING MACHINE

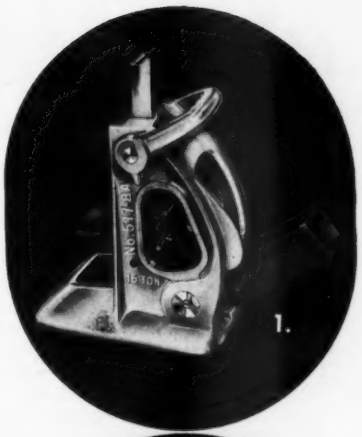
A SINGLE machine which will provide either ac or dc current for

welding has been announced by the Harnischfeger Corporation, Milwaukee, Wis. Known as the P&H model DA-200, the welding machine has a range from 7 to 275 amp ac and from 7 to 200 amp dc. The unit operates on 220 or 440-

volt, 50 or 60-cycle, single-phase current and is equipped with a P&H Dial-lectric control which is said to provide instantaneous heat selection. The DA-200 has no moving parts, and can be furnished with a remote control radio-type dial for use at the scene of the work.

FRONT-END LOADER

A NEW 1-cu. yd. front-end loader with torque converter has been added to the Pettibone "Speedall" front end loader line, manufactured by the construction equipment division of the Pettibone Mulliken Corporation, Chicago. Powered by gasoline (Model 10) or diesel (Model 10D) engines, this new smaller capacity loader joins the 1¼-cu. yd. Model 15 Series Speedall, which the manufacturer made available for national distribution last summer. The machine is so designed that when the bucket is centered over a truck, 7 ft. above the ground, the front tires of the loader are 2 ft. away from the truck body thus eliminating the loss of time ordinarily required for spotting such loaders. The manufacturer claims that the following features are outstanding in the Speedall loaders: High dump and long reach; torque converter power transmission; and low cost of maintenance and operation.



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Changes in Railway Personnel

Engineering

F. W. Campbell, district engineer on the Canadian National at Montreal, Que., has been advanced to engineer maintenance of way, Central Region, with headquarters at Toronto, Ont., succeeding **D. W. Blair,** whose promotion is noted elsewhere in these columns. **E. S. English,** district engineer at Winnipeg, Man., has been transferred to Montreal to replace Mr. Campbell. **C. J. Morris,** office engineer at Toronto, has been promoted to the newly created position of assistant to chief engineer, Central Region, at that point.

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J. J. Healy, who has been named assistant division engineer on the Boston & Maine at Winchester, Mass. (*RT&S*, June, page 60), was born at Charlestown, Mass., February 7, 1905. He attended Northeastern University where he received a BS degree in civil engineering in 1929. He began his railroad service in April 1928 as a chainman on the B&M, later serving as a rodman, draftsman and transitman at Boston until being appointed assistant B&B supervisor at that same point in July 1943. In August 1949 he was promoted to supervisor B&B at Boston, serving there until his recent promotion.

J. J. Healy

B. V. Bodie, chief engineer on the Gulf, Mobile & Ohio at Mobile, Ala., has been named assistant vice-president and chief engineer at that same point.

Mr. Bodie was born at Pittsburgh, Pa., January 13, 1910. He attended Baltimore Polytechnic Institute and Johns Hopkins University where he received a Bachelor of Engineering degree in 1933. He began his railroad service in 1928, working dur-

B. V. Bodie

ing school vacation as a clerk in the car service department on the B&O. After completing his formal schooling he worked with the U. S. Geodetic Survey Corps as a rodman. In May 1944 he joined the PRR as a signalman helper at Baltimore. In August 1935 he was appointed rodman on the Alton at Bloomington, Ill., later being advanced to instrumentman. He subsequently served as an instrumentman in the B&B engineer's and chief engineer's offices until being appointed trainmaster in January 1942. Mr. Bodie became division superintendent in December 1943, serving in this same capacity after the Alton was taken over by the GM&O. He was promoted to chief engineer in August 1951.

H. B. Christianson, Jr., division engineer on the Rock Island at Des Moines, Iowa, has been advanced to the newly created position of assistant chief engineer, with headquarters at Chicago.

T. T. Word, who has been promoted to division engineer on the Santa Fe at Wellington, Kan. (*RT&S*, June, page 58), was born at Alfred, Tex., November 8, 1901. He attended the University of Texas where he received a BS degree in

T. T. Word

civil engineering in 1924, and began his railroad service with the Panhandle & Santa Fe at Slaton, Tex., in September 1925. He worked successively as a chainman, rodman, draftsman, transitman and assistant engineer until being promoted to roadmaster on the AT&SF at Wellington in February 1951.

R. A. Boerke has been appointed engineer of tests on the Burlington, with headquarters at Aurora, Ill., succeeding **F. W. Dunning,** who has retired after more than 38 years of service.

C. H. Newlin, bridge and building supervisor on the Southern at Bristol, Va., has been promoted to engineer of bridges, Eastern Lines, with headquarters at Charlotte, N. C., succeeding **H. C. Libby.**

T. W. Avery, assistant chief engineer on the Kansas City Terminal at Kansas City, Mo., has been promoted to chief engineer at that same point, succeeding **F. J. Ackerman,** who has retired after 42 years of service.

G. R. Collier, division engineer on the Gulf, Colorado & Santa Fe at Temple,

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Railway Personnel (Cont'd)

Tex., has been promoted to district engineer at Galveston, Tex., succeeding **J. E. Eisemann,** who has been named district engineer on the Southern district, Western Lines, of the AT&SF at Amarillo, Tex., succeeding **J. W. Walter,** who has retired. **W. S. Autrey,** roadmaster at Temple, succeeds Mr. Collier as division engineer at that same point.

R. R. Gunderson, bridge and structural engineer on the Western Maryland, at Baltimore, Md., has been appointed to the newly created position of engineer maintenance of way at that same point. **E. D. Billmeyer,** division engineer at Cumberland, Md., has been promoted to bridge and structural engineer to replace Mr. Gunderson. **R. B. Wooters** has been named division engineer at Cumberland, succeeding Mr. Billmeyer.

A. V. Johnston, assistant chief engineer on the Canadian National, has been promoted to chief engineer at Montreal, Que., succeeding **R. O. Stewart,** who has retired. Mr. Stewart will be retained by the CNR as a consulting engineer for the Montreal Terminal development and other special projects. **H. J. Fast,** assistant to chief engineer, has been appointed assistant chief engineer, replacing Mr. Johnston, **H. C. T. Boyd,** assistant chief research, has been named assistant to chief engineer, replacing Mr. Fast.

Mr. Johnston was born at St. Thomas, Ont., July 31, 1909. He attended Collegiate Institute at St. Thomas and Queen's University where he received a BS degree in engineering in 1935. He began his railroad service in August 1927 on the St. Thomas division of the CNR, working as a helper, bridge man and bridge carpenter until July 1936 when he was appointed bridge and building master. In May 1941 he was promoted to assistant division engineer on the Belleville (Ont.) division and was advanced to division engineer in December 1942. In August 1946 Mr. Johnston was named senior assistant engineer, Central Region, at Toronto, later being promoted to office engineer at

A. V. Johnston

that same point. He was advanced to assistant chief engineer of the Central Region in November 1949 and in April 1950 was appointed office engineer, system at Montreal. He became assistant chief engineer, system, at Montreal in February 1950.

Mr. Stewart was born at Lindsay, Ont., May 19, 1889. He attended the University of Toronto where he received a civil engineering degree in 1911 and following graduation was employed in the engineering department of the Dominion

R. O. Stewart

Bridge Company. He began his railroad service in 1913 as an assistant engineer in the bridge department of the Canadian Government Railways at Moncton, N.B. After organization of the CNR system, Mr. Stewart became assistant engineer of bridge standards at Toronto and Montreal successively. He subsequently served as engineer of bridges and assistant chief engineer of construction before being appointed chief engineer, system, in 1952.

A photograph of Mr. Fast and a biographical sketch appeared in the April issue of *RT&S* on the occasion of his appointment as assistant to chief engineer.

Mr. Boyd, a native of the Island of Penang off the coast of Malaya, is a

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graduate of Cambridge University, receiving an MA degree in mechanical sciences in 1927. He came to Canada in

H. C. T. Boyd

1929, and after working in private business and with various engineering firms, went to India to serve with the Military Engineering Services in 1936. In 1939 he returned to Canada and was engaged in defense projects until 1944 when he joined the CNR as assistant engineer in the research and development department. He was appointed assistant chief of research in December 1953.

D. W. Blair, engineer maintenance of way, Central Region, Canadian National, has been named assistant chief engineer, Atlantic Region, with headquarters at Moncton, N.B. Mr. Blair succeeds **E. W. G. Chapman,** who has retired. A photograph of Mr. Blair and a sketch of his railroad career appeared in the April issue of *RT&S* on the occasion of his advancement to engineer maintenance of way.

B. E. Pearson, whose promotion to chief engineer of the Duluth, South Shore & Atlantic at Marquette, Mich., was announced recently (*RT&S*, May, page 64), was born at Marquette on May 21, 1920. He attended the Michigan College of

B. E. Pearson

Mining & Technology and began his railroad service with the DSS&A in 1941 as a chairman at Marquette. He served successively as instrumentman, assistant engineer and acting supervising engineer at that point until his recent promotion.

M. C. Bitner, engineer maintenance of way on the Pennsylvania at Chicago, has been appointed general superintendent, methods and cost control, in the office of the chief engineer, system, at Philadelphia. **J. J. Baffa,** supervisor track at Chicago, has been promoted to assistant division engineer at New York, succeeding **J. T. Evans,** who has been advanced to division engineer of the Delmarva division with headquarters at Cape Charles, Va. Mr. Evans succeeds **K. A. Werden,** who has been named division engineer, special duty, in the office of the chief engineer at Philadelphia. **J. W. Diffenderfer,** supervisor of track at Johnstown, Pa., has been promoted to assistant division engineer, special duty, in the office of the vice-president at Philadelphia.

C. A. Colpitts, assistant chief engineer on the Canadian Pacific at Montreal, Que., has been promoted to chief engineer, succeeding **R. A. Emerson,** whose advancement to vice-president, operations and maintenance, was announced in the June issue. **G. E. Shaw,** engineer of bridges, has been named assistant chief engineer to replace Mr. Colpitts. **C. Neufeld,** assistant engineer of bridges, has been promoted to engineer of bridges, succeeding Mr. Shaw. **J. M. Bentham** becomes assistant engineer of bridges to replace Mr Neufeld.

Mr. Colpitts joined the CPR's engi-

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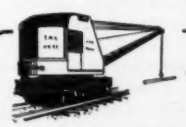

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neering department in 1926 following his graduation from the University of Manitoba with a BS degree in civil engineering in 1933. Prior to that time he had worked in the construction department at various points in western Canada on a part-time basis while attending school. In July 1934 he was promoted to transitman and served in this capacity until April 1941 when he was appointed roadmaster on the Edmonton division. In December of that same year he was promoted to division engineer at Saskatoon, Sask., later serving in this same capacity at Vancouver, B.C. He was named assistant district engineer on the British Columbia district in May 1949 and became district engineer at that same point in February 1950. From October 1950 to October 1951 he served as engineer of track, system, at Montreal before being named assistant chief engineer, system at that point.

C. A. Colpitts

Mr. Shaw, a graduate of McGill University with a BS degree in 1924 and an MS degree in 1925, began his railroad service in May 1925 as a draftsman in the bridge department. In July 1928 he was promoted to assistant engineer, becoming assistant engineer of bridges in July 1941. He was advanced to engineer of bridges in 1946.

G. E. Shaw

W. E. Griffiths, assistant chief engineer, Central Region, Canadian National, at Toronto, Ont., has been promoted to chief engineer at that point, succeeding **K. Huffman,** who has retired.

Mr. Griffiths was born in Ilford, England, and was graduated from McGill University in 1931. After serving with a number of engineering companies and as an engineer for the city of Toronto, he entered railroad service in 1937 as a concrete inspector on the CNR. Later he served as an instrumentman, assistant engineer and assistant division engineer at Montreal, Que. In 1944, he was appointed division engineer at Ottawa, Ont., and in 1946 was transferred to Montreal in the same capacity. Later that year, he was appointed general maintenance inspector in the office of the chief engineer, becoming engineer of track at Montreal in November 1947. He was promoted to assistant chief engineer, Central Region, in June 1950.

W. E. Griffiths

Mr. Huffman was born at Toronto, Ont., May 12, 1889. He began his railroad service with the CNR as a draftsman in February 1910. He subsequently served as assistant engineer, draftsman, and acting division engineer before being appointed engineer of construction, Central Region, in February 1940. He was named chief engineer, Central Region, at Toronto in August 1951.

K. Huffman

Track

W. J. Rigney, whose promotion to supervisor of track on the Central of New Jersey was announced recently (*RT&S*, June, page 60), was born at New York on November 9, 1923. He graduated from Lehigh University in February 1950, and began his railroad service with the New York Central as a rodman and transitman at Poughkeepsie, N. Y., following graduation. In September 1952 he was promoted to assistant supervisor of track at Fonda, N. Y., and in September 1954 was appointed to the Methods & Procedures Committee at New York.

J. W. Campbell, assistant roadmaster on the Seaboard Air Line at Hamlet, N. C., has been promoted to roadmaster of the Georgia division, with headquarters at Clinton, S. C., succeeding **C. T. Nix,** deceased. Mr. Campbell is a native of Greenville, S. C., and before becoming associated with the Seaboard in March 1942 he had obtained other railroad experience. He has served the Seaboard as apprentice foreman, section foreman, foreman of extra gangs and assistant roadmaster.

H. F. Kanute, who has been appointed roadmaster of the Frisco at Springfield, Mo. (*RT&S*, June, page 64), was born September 17, 1903, at Mason City, Iowa. He attended the University of Kansas where he received a BS degree of civil engineering in 1926, and began his railroad service with the MK&T as an instrumentman at Parsons, Kan. in January 1927. He worked on highway construction in eastern Kansas from June 1932 to July 1934 when he was appointed

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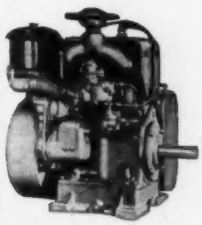
Racine Hydra-Quad Tamper
Speeds Up Tamping... Cuts Costs

With this hydraulically controlled and operated unit, ONE MAN handles four tamping tools, with each tamping unit acting independently to assure full compaction of ballast at all points.

A 500 PSI, 26 GPM pumping unit, powered by a Model TFD Wisconsin Heavy-Duty Air-Cooled Engine, delivers approximately 1100 blows per minute to each of the four tamping tools working through a specially designed hydraulic accumulator and rotary valve.

A fluid motor, driven by the hydraulic power unit, provides the necessary power for self-propulsion on the track, and a power winch is provided as standard equipment to assist small gangs in re-railing the machine after a set-off. No special set-off location is required.



This 3¼"x3¼" Model TFD 2-cylinder Wisconsin Air-Cooled Engine meets all the power requirements of the Racine Hydra-Quad Tamper. Cu. in. displ. 53.9. Power range 8.7 to 15 hp, 1400 to 3000 rpm. Equipped with Stellite exhaust valves and valve seat inserts and positive type valve rotators for lowest cost maintenance and long engine life.

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Railway Personnel (Cont'd)

superintendent of a CCC camp in Missouri. In August 1942 he was appointed associate engineer with the U. S. Corps of Engineers in the Kansas City district. He joined the Frisco as an instrumentman at Memphis, Tenn., in March, 1946, and was promoted to assistant engineer at Springfield in June, 1950.

R. M. DeMoss, whose promotion to roadmaster on the Sante Fe at Wellington, Kan., was announced recently (*RT &S*, June, page 64), was born at Topeka, Kan., September 5, 1917. He attended Kansas State College in 1935-37 and began his railroad service with the Santa Fe in April 1941 as a chainman. He was promoted to rodman at Clovis, N. M., in September 1941, and became a draftsman at Amarillo, Tex., in October 1942. He returned to Clovis in March 1943 as a transitman, later serving in the same capacity at Amarillo until being appointed ballast cleaner supervisor, system, in September 1947. He was appointed acting roadmaster at San Angelo, Tex., in May 1948. In August 1948 he was named building inspector at Roswell, N. M., later serving as a transitman at Wellington, Carlsbad, N. M., and Slaton, Tex. In January 1953 he was again appointed building inspector at Lubbock, Tex., subsequently serving in this same capacity at La Junta, Colo., and Hutchinson, Kan.

Bridge and Building

R. E. Shamblin, who has been promoted to a supervisor of B&B on the Norfolk & Western at Bluefield, W. Va. (*RT&S*, June, page 66), was born at English, W. Va., June 29, 1911. He began his railroad service with the N&W as a carpenter in November 1936, being appointed special steel inspector at Roanoke, Va., in May 1945. He was promoted to assistant supervisor of B&B at Portsmouth, Ohio, in July 1948.

Association News

Bridge & Building Association

A meeting of the Executive committee will be held at the Chicago Engineers' Club on June 27. There will be two principal items of business to transact, both having to do with plans for the annual convention to be held on September 19-21 at the Conrad Hilton Hotel, Chicago, concurrently with the annual meeting of the Roadmasters' Association.

One of the principal items of business will consist of reading and approving the seven reports that are being prepared by the subjects committees for presentation at the convention. The other will consist of making final plans for the program as a whole. Already several top-ranking railway officers have accepted invitations to speak during the joint sessions with the Roadmasters' group. A special feature of the program will be the showing of several moving pictures.

Roadmasters' Association

Preparations are in full swing for the annual convention to be held September 19-21 at the Conrad Hilton Hotel, Chicago. On May 23 the Executive committee held a meeting at Chicago at which four of the reports of subjects committees were reviewed and approved. The other three reports will be reviewed at a meeting of the Executive committee to be held on July 18.

The Program committee has been working for months to develop interesting features for the meeting. It is expected that final details of the program, including plans for entertaining ladies attending the convention, will be decided at the July 18 meeting of the Executive committee.

Organizations

American Railway Bridge and Building Association—Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5. Next annual meeting, September 19-21, 1955.

American Railway Engineering Association—Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—S. Kosco, Secretary-Treasurer, 135 East Eleventh place, Chicago 5.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer, Room 1008, Frisco Building, 906 Olive street, St. Louis 1, Mo.

National Railway Appliances Association—Kenneth Cavins, Secretary, 310 S. Michigan avenue, Chicago 4; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Northwest Maintenance of Way Club—L. C. Blanchard, secretary-treasurer, Room 27, Milwaukee Depot, Minneapolis 1, Minn.

Railway Tie Association—Roy M. Edmonds, Secretary-Treasurer, 1221 Locust street, St. Louis 3, Mo. Next annual meeting, October 26-28, Peabody Hotel, Memphis, Tenn.

Roadmasters' and Maintenance of Way Association of America—Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5. Next annual meeting, September 19-21, 1955.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.

American Railway Engineering Association

At the time of going to press two committees have scheduled meetings to be held in July. They are: Wood Bridges and Trestles—July 1-2, San Francisco, Cal., including inspection trips; and Economies of Railway Labor—July 12-13, Hotel Selwyn, Charlotte, N.C., including inspection of mechanized gangs on the Southern.

Supply Trade News

General

The **International Trailer Company** has announced the appointment of the following companies and personnel as its representatives for the railroad industry: Ralph W. Payne Company, Washington, D. C.; Eastern Railway Supplies, Inc., New York; Stanley H. Smith & Co., Cleveland; and Clarence Gush, St. Louis.

The **L. B. Foster Company** has announced the opening of a new office at 805 Peachtree Street, N. E., at Atlanta, Ga. The new office will serve the states of Alabama, Florida, Georgia, North Carolina, South Carolina and Tennessee. It will be headed by **Paul A. Duke,** a graduate engineer from Georgia Tech, who was formerly associated with the Atlantic Steel Company. **Harold Ford,** also a Georgia Tech graduate, will assist Mr. Duke in office and sales activities. Mr. Ford was previously associated with the Crane Company.

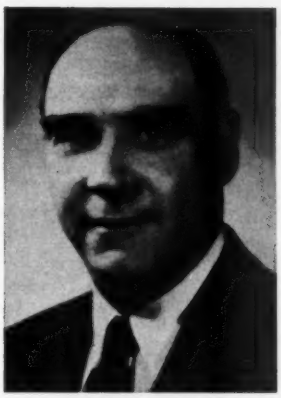
Six new dealers have been appointed to sell and service the Michigan line of tractor-shovels and excavator-cranes manufactured by the **Construction Machinery Division** of **Clark Equipment Company.** The new dealers and their territories are: Stephens Equipment Company, Des Moines, Iowa (Central Iowa); R. E. Common Equipment Company, Peoria, Ill. (West-Central Illinois); Machinery Outlet, Inc., Wichita, Kan. (Central and Western Kansas); Totem Equipment Company, Seattle, Wash. (Washington, except for five southwest counties, and Northern Idaho); West Virginia Tractor and Equipment Company, Charlestown, W. Va. (West Virginia with the exception of the counties of Marshall, Ohio, Brooke, Hancock, Morgan, Berkeley and Jefferson); Barker Equipment Company, Fredericton, N. B. (Province of New Brunswick).

Personal

George C. Betz has been appointed manager of sales for the Chemical & Metals Department of **Metal & Thermit Corporation** at New York, N. Y.

Max K. Ruppert, first vice-president of **Poor & Co.,** has been elected executive vice-president, and **Eugene C. Bauer, Jr.,** has been named vice-president. Mr. Ruppert is president of the P&M Co. and Mr. Bauer is president of Kensington Steel Company. Both companies, located in Chicago, are subsidiaries of Poor & Co.

Buel M. Wallis, formerly general sales manager of the Adams Division of Le-Tourneau-Westinghouse Company at Indianapolis, has been appointed sales manager for the Schield Bantam Company at Waverly, Iowa.



Buel M. Wallis

Mr. Wallis had been with the J. D. Adams Company for 25 years, serving as manager of the company's Washington (D.C.) office, export manager, manager of federal government sales, and, most recently, as general sales manager.

Douglas Grymes, Jr., executive assistant to the vice-president and general manager, and sales manager for the **Wood Preserving Division** of **Koppers Company, Inc.,** has been promoted to vice-president at Pittsburgh, Pa. He will continue as sales manager.

A native of St. Louis, Mo., Mr. Grymes attended Spring Hill College in Mobile, Ala. Upon graduation he joined the Ayer & Lord Tie Co., which later became a

Douglas Grymes, Jr.

part of Koppers' Wood Preserving Division. After having sales assignments in Houston, Tex., Texarkana, Dallas and Pittsburgh from 1937 to 1948, he was named Pittsburgh District sales manager. In 1952 he was advanced to manager of railroad sales, and was appointed sales manager for the Division in July 1953. He became assistant vice-president in June 1954 and was made executive assistant to the vice-president and general manager in December 1954.

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Easily attached to swinging leads of diesel cranes.
Quick conversion of crane to mobile pile driving rig.
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In capacities from 5,000 to 20,000 ft. lbs. per blow.
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TRACK TOOL TRANSPORTER

This handy, light-weight push car carries tools to the job site from the nearest crossing or other point where truck or bus must stop. *Men arrive fresh and ready for work having been spared the laborious job of toting hundreds of pounds of tools and equipment—saves time—and muscles—for the important job!* Rolls easily on anti-friction bearings even when fully loaded.

Handle can be inserted on either side for pushing in either direction.

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WOOLERY MACHINE CO.

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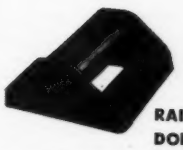
First Choice for Railroad Use!



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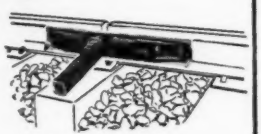

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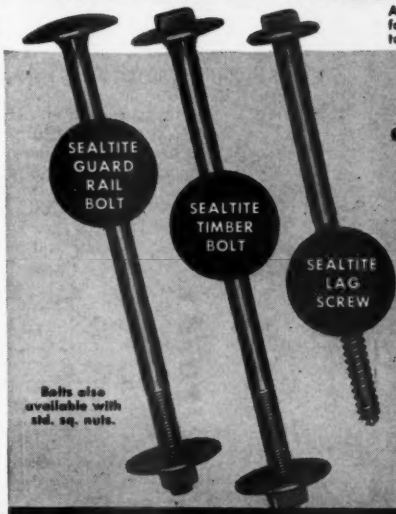
All products are manufactured in the U.S.A. to A.S.T.M. specifications



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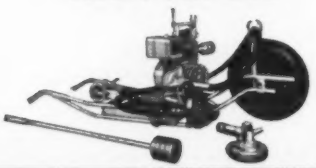

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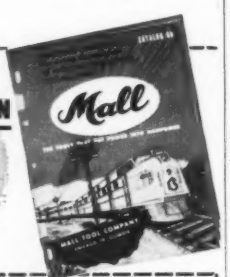

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EU-168

Manufacturers' Literature

Following is a compilation of free literature, pamphlets and data sheets offered by manufacturers to the railroad industry. Circle the number(s) on the coupon below to receive the desired information. Requested items sent direct by manufacturers.

HOUSE TRAILERS

1. HOUSE TRAILERS. *Mon-O-Coach, Inc.* 48-page file folder "Mon-O-Coach Off-Track Trailers For Housing Maintenance Forces" describes and gives in complete detail the facts about Mon-O-Coach off-track trailers.

2. HOUSE TRAILERS. *Morrison Railway Supply Corp.* Multi-page brochure gives complete details on the Morrison International Camp Car for maintenance economies—the mobile housing for traveling work crews at or away from city utilities.

3. HOUSE TRAILERS. *International Trailer Co., Inc.* Typical plans and complete information offered on the complete International line of custom-built trailers for M/W gangs—including kitchen-diner, bunk and office trailers.

4. HOUSE TRAILERS. *Richardson Homes Corp.* Complete information and prices offered on Richardson mobile units, "off the road" housing for repair crews.

5. HOUSE TRAILERS. *Skyline Coach Co., Inc.* Complete details, including photos and diagrams, offered on the wide range of sizes and floor plans available in Skyline Mobile Homes—as noted in ad in this issue.

6. HOUSE TRAILERS. *Indian Trailer Corp.* Details offered by the manufacturer on the suitability of Indian Trailer Mobile Homes for railroad work crew needs; points out flexibility, efficiency, economy of this method of crew housing.

MISCELLANEOUS

7. COMPRESSOR. *Ingersoll-Rand.* 4-page 2-color bulletin (1540) "Now a 20-hp. Air-Cooled Compressor With The Famous I-R Channel Valve" describes, illustrates and gives specifications on the new I-R 20 Compressor.

8. TRUCK-SHOVEL. *"Quick-Way" Truck Shovel Co.* 6-page fanfold bulletin (255L2) describes and illustrates construction and capacities of "Quick-Way" ⅜ cubic yard Model L-2 truck shovel; discusses important features and lists digging ranges and ratings with charts.

9. GRATING. *Klemp Metal Grating Corp.* 16-page "Klemp Data and Specification Manual" covers all types of grating, open steel floor armor, stair treads, vessel liners, bridge decking and drain grates; includes many tables and charts on safe loads, standard widths and types of steel stair treads most used.

10. TRACTORS. *Caterpiller Tractor Co.* 6-page fanfold (717-31480) describes, illustrates and gives complete specifications on the new Cat D7 Tractor Series C; includes cut-away drawings and photos.

11. GRATING. *Blaw-Knox.* 16-page grating catalog (2486) "Electroforged Steel Grating and Treads" describes types, sizes and load characteristics of complete line of electroforged steel and interlocked aluminum grating by Blaw-Knox; on-the-job application photos included.

12. SWITCH PLATE LUBRICANT. *Joseph Dixon Crucible Co.* 3-hole punched technical bulletin (701) gives complete instructions for application of Dixon's 1954 quick-drying lubricant on switch plates.

13. LOADERS. *Austin Div. Central Ohio Steel Products Co.* 5 catalog specification sheets describe, illustrate, give specifications and dimensions for the complete line of Austin Overshot loaders; include detail and in-action photos.

14. CORRUGATED METAL PIPE. *Armco Drainage & Metal Products, Inc.* 6-page fanfold bulletin (CMS 8854) "How Armco Drainage Structures Sidetrack Maintenance" pictures and describes typical service case histories of corrugated metal pipe installations dating back as far as 46 years.

15. BATTERIES. *C & D Batteries, Inc.* 3 bulletins describe, illustrate and give specifications on batteries for control, switchgear, emergency lighting and auxiliary power (Bulletin CP-538 "Hi-Power Batteries; Bulletin CP-536 "Plastical Lead-Calcium Batteries"; Bulletin CP-537 "Plasticell High-Tensile Alloy Grid Batteries"). *Write-in bulletin number.*

16. CRANES. *Star Machine & Tool Co.* Data available on the versatile and low-cost Star Hydro-Lift Cranes in ½-ton, 1-ton and 2-ton capacities, and in hand-operated, electrically operated, and combination manual-electrically operated models.

17. SAFETY SIGNS & TAGS. *Ready Made Sign Co.* 48-page 5-color catalog "Ready Made Signs for Safety" describes and illustrates in actual color over 2,200 of its stock metal signs and safety tags as an aid in preventing accidents in factories, shops, business establishments.

18. SWITCH POINT ROLLER. *Railroad Materials Corp.* 4-page 2-color folder "Gray-Wade Railway Switch Point Roller" decribes, illustrates, lists advantages and with cut-away drawings shows application instructions for these railway switch point rollers.

Reader Service Department — **JULY, 1955**
Railway Track and Structures
30 Church Street, New York 7, N. Y.

Please send literature circled below:

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Also, please send me product information on the following (show product & page number): .....

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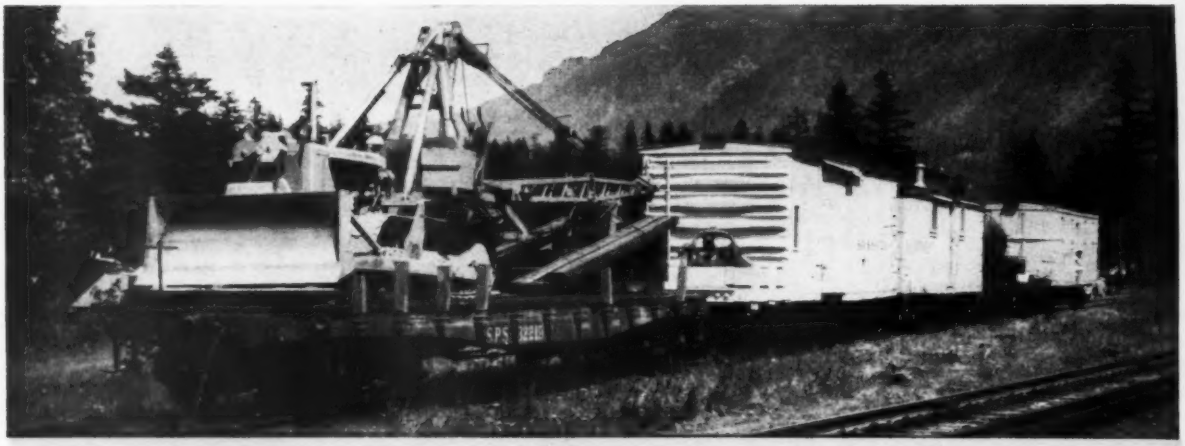
A COMPLETE LINE OF RAILWAY SPRING WASHERS



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HYSTAWAY
speeds crane or excavating and bulldozing work ...anywhere on the railroad

The Spokane, Portland and Seattle Railway is combatting the high cost of conventional work-train service with a unit that requires no train crew or locomotive while on the job. Completely self contained and operated by only two men, this outfit consists of five cars and a Hystaway® mounted on a Caterpillar® D6 Tractor equipped with *ESCO* track-walking shoes and a 6S bulldozer blade.

When a roadmaster calls for the unit, it is quickly dispatched by train to the siding nearest the job. The Hystaway then moves to the work site at tractor speeds. Track-walking shoes permit travel directly on the rails, if desired.

Completely equipped, the two-man crew can perform crane, bulldozing or excavating jobs such as unloading and loading rail, laying rail, handling ballast material, grading, filling and ditching.

You can mount a Hystaway on a *new or used* Caterpillar track-type tractor *fast* without special equipment or tractor alterations. Hystaway has "no tail swing". **Permits working in confined areas**—up against walls, in tunnels and other places where conventional excavator cranes can't operate. Hystaway heavy duty diesel tractor engine power minimizes hang-ups, stalling and expensive engine wear. Ask your Caterpillar-Hyster Dealer for details, or write to: HYSTER COMPANY, 2902-56 N. E. Clackamas St., Portland 8, Oregon, or 1802-56 N. Adams St., Peoria 1, Illinois.

HYSTER COMPANY

"Matched Design" Tractor Equipment for All Industries